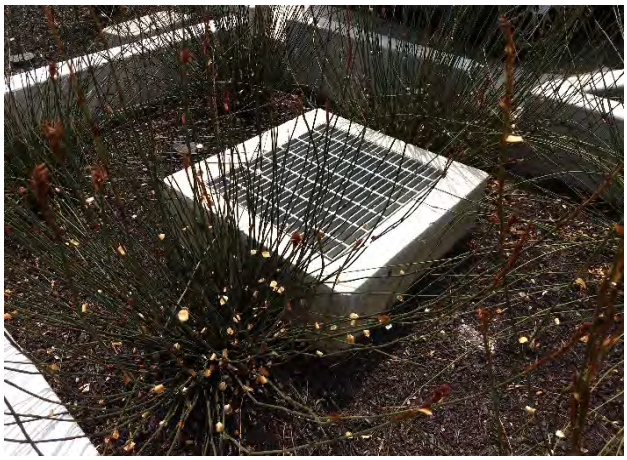
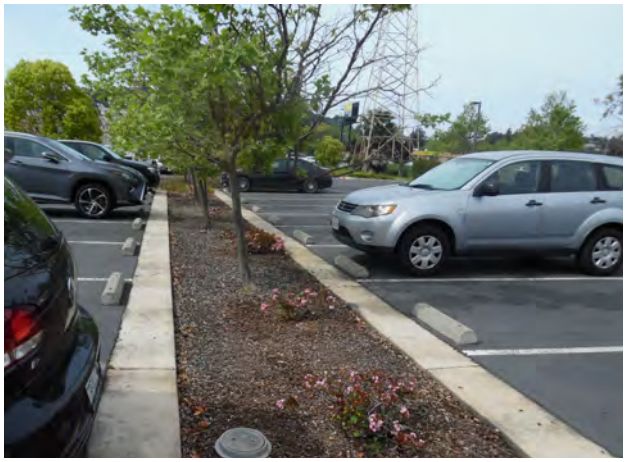
Green Infrastructure Plan

City of Belmont





September 24, 2019

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List of Acronyms

Acronym	Definition
Ac	Acre
Ac-ft	Acre-feet
BASMAA	Bay Area Stormwater Management Agencies Association
C/CAG	City/County Association of Governments
CEQA	California Environmental Quality Act
CIP	Capital Improvements Projects
Countywide Program	San Mateo Countywide Water Pollution Prevention Program
DMA	Drainage Management Area
FY	Fiscal Year
GI	Green infrastructure
LID	Low impact development
HM	Hydromodification management
HRU	Hydrologic Response Units
LSPC	Loading Simulation Program C++
MRP	Municipal Regional Stormwater Permit
MTC	Metropolitan Transportation Commission
N/A	Not appropriate
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and maintenance
PCBs	Polychlorinated biphenyls
RWQCB	Regional Water Quality Control Board
RAA	Reasonable Assurance Analysis
sf	Square feet
SMCWPPP	San Mateo Countywide Water Pollution Prevention Program
SRP	Stormwater Resource Plan
SUSTAIN	System for Urban Stormwater Treatment & Analysis Integration
TBD	To be determined
TMDL	Total maximum daily load

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1.0 Introduction

a. Purpose of the Green Infrastructure Plan

The purpose of the Green Infrastructure Plan is to guide the identification, implementation, tracking, and reporting of green infrastructure projects within the City of Belmont, in accordance with the Municipal Regional Stormwater Permit (MRP), Order No. R2-2015-0049, adopted by the San Francisco Bay Regional Water Quality Control Board on November 15, 2015. "Green infrastructure" is stormwater infrastructure that uses vegetation, soils, and natural processes to manage water and create healthier urban environments. At the scale of a city or county, green infrastructure refers to the patchwork of natural and landscaped areas that provides habitat, flood protection, cleaner air, and cleaner water. At the scale of a neighborhood, street, or site, green infrastructure refers to stormwater management systems that mimic nature by soaking up, storing, and/or improving the quality of water.

Belmont Goals and Vision

Belmont's goals in preparing this Green Infrastructure Plan include the following:

1. Advance established General Plan goals and policies related to:
    a. The preservation of water quality by promoting the protection of Belmont's creeks and other natural water bodies from pollution .
    b. The City's participation in the San Mateo Countywide Water Pollution Prevention Program .
    c. Require development projects to incorporate structural and non-structural best management practices (BMPs) to mitigate or reduce the projected increases in pollutant loads, in accordance with the NPDES permit guidelines.
    d. The preservation of water resources for long-range community water needs by adopting best management practices for water use and conservation.
    e. Maintaining and improving the reliability of the City's storm drainage system, and promote best management practices to protect this system from flooding, enhance water quality, and prevent infrastructure deterioration.

2. Demonstrate the City of Belmont's intent to gradually shift from the existing traditional "gray" storm drain infrastructure, which channels polluted runoff directly into receiving waters without treatment, to a more resilient and sustainable system of managing stormwater runoff that includes green infrastructure, which slows runoff by dispersing it to vegetated areas, harvests and uses runoff, and promotes infiltration and evapotranspiration.

3. Achieve the long-term reduction of specific pollutant loads to targets set by the San Mateo Countywide Reasonable Assurance Analysis (RAA) and this Green Infrastructure Plan to satisfy the current San Francisco Bay Region Municipal Regional Stormwater Permit (MRP).
    a. Reductions of pollutant loads will be made through private implementation of green infrastructure as defined by C.3 New and Redevelopment requirements of the MRP.
    b. Reductions of pollutant loads will be made through implementation of identified and prioritized green infrastructure opportunities in public parcels and within public street rights of way.
    c. Consider the establishment of additional green infrastructure requirements on private property projects to install and maintain green infrastructure within rights of way as part of their frontage improvement requirements and/or to provide green infrastructure on site beyond that required under C.3 Regulated Project requirements.
    d. Opportunities for achieving further reductions of pollutant loads will be made through identifying and implementing opportunities for joint public-private green infrastructure and partnerships between the City and other public agencies.

4. Achieve coordination across Belmont's plans, policies, codes, standards, ordinances, and other means to maximize the amount and effectiveness of green infrastructure implementation. This includes integration of green infrastructure stormwater goals with other community, economic, equity, multimodal, flooding/sea level rise, climate adaptation, and sustainability goals to enhance community benefits, increase the City's synergies, and improve cost economies and work efficiencies.
    a. Implement revisions and updates to Belmont documents during and after the Green Infrastructure Plan process and adoptions.
    b. Provide recommendations and a methodology for updating documents in the future and including green infrastructure in new plans that are developed in the future.
    c. Establish easy to use regulations and permit applications for private project applicants to determine, design, install, and maintain green infrastructure.
    d. Update the Belmont Green Infrastructure Plan when needed following updates of the regional MRP and to reflect the evolution of green infrastructure best practices and other changes that affect the implementation and maintenance of green infrastructure in Belmont.

5. Provide design guidance, typical details, and other standards for the routine incorporation and maintenance of green infrastructure elements and treatments into projects and improvements constructed in Belmont, including:
    a. Private new or (re)development projects;
    b. Building or site remodeling projects; and,
    c. Capital improvement projects undertaken by the City, including building, site, stormwater infrastructure, and transportation improvement projects.

6. Provide a basis for establishing routine coordination and collaboration between and within different City departments and divisions involved in the planning, design, construction, monitoring, and maintenance and operation of the City's streets, facilities, and open space to further consider, identify, evaluate, and select opportunities for green infrastructure in projects; and define the responsibilities and required budgetary needs required in the implementation of the Green Infrastructure Plan.
    a. Establish and program for a green infrastructure working group charged with monitoring progress of Green Infrastructure Plan implementation.
    b. Establish on-going reporting procedures for green infrastructure planning, design, approval, implementation, and operations and maintenance.

7. Support the collaboration and implementation of potential regional or joint projects with San Mateo County and the cities of San Mateo and Redwood City as well as other jurisdictions and agencies in watersheds shared with Belmont to reduce and remove contaminants from stormwater runoff.

8. Serve as a basis for raising awareness and further educating the general public and building permit applicants about the merits of implementing green infrastructure and opportunities for how to accomplish this in the City of Belmont.

9. Support the process of applying for funding design, construct, operations and maintenance of green infrastructure demonstration and permanent projects in Belmont.

10. Monitor the planning and provision of green infrastructure in the City to determine if MRP treatment goals are being met, and if not, take action to identify and implement other green infrastructure projects including those in partnership with others.

11. Support the development of related countywide programs such as the potential San Mateo County Flooding and Sea Level Rise Resiliency Agency to aid in the planning, implementation, and funding of green infrastructure and other improvements for improving conditions related to water quality, flooding, and impacts associated with climate change.

Regulatory Water Quality Requirements

This Green Infrastructure Plan has been developed to comply with Green Infrastructure Plan requirements in Provision C.3.j of the MRP, which states in part:

> *The Plan is intended to serve as an implementation guide and reporting tool during this and subsequent Permit terms to provide reasonable assurance that urban runoff TMDL wasteload allocations (e.g., for the San Francisco Bay mercury and PCBs TMDLs) will be met, and to set goals for reducing, over the long term, the adverse water quality impacts of urbanization and urban runoff on receiving waters. For this Permit term, the Plan is being required, in part, as an alternative to expanding the definition of Regulated Projects prescribed in Provision C.3.b to include all new and redevelopment projects that create or replace 5,000 square feet or more of impervious surface areas and road projects that just replace existing imperious surface area. It also provides a mechanism to establish and implement alternative or in-lieu compliance options for Regulated Projects and to account for and justify Special Projects in accordance with Provision C.3.e.*
>
> *Over the long term, the Plan is intended to describe how the Permittees will shift their impervious surfaces and storm drain infrastructure from gray, or traditional storm drain infrastructure where runoff flows directly into the storm drain and then the receiving water, to green—that is, to a more-resilient, sustainable system that slows runoff by dispersing it to vegetated areas, harvests and uses runoff, promotes infiltration and evapotranspiration, and uses bioretention and other green infrastructure practices to clean stormwater runoff.*
>
> *The Plan shall also identify means and methods to prioritize particular areas and projects within each Permittee's jurisdiction, at appropriate geographic and time scales, for implementation of green infrastructure projects. Further, it shall include means and methods to track the area within each Permittee's jurisdiction that is treated by green infrastructure controls and the amount of directly connected impervious area. As appropriate, it shall incorporate plans required elsewhere within this Permit, and specifically plans required for the monitoring of and to ensure appropriate reductions in trash, PCBs, mercury, and other pollutants.*

MRP Provision C.3.j requires Permittees to complete and implement GI Plans that facilitate Permittee efforts to transition from traditional gray to green infrastructure-centric approaches. The MRP sets forth three broad goals for these plans:

1. Ensure each Permittee has established the necessary procedures and practices to require and implement green infrastructure practices in public and private projects as part of its regular course of business.

2. Serve as a reporting guide and implementation tool to provide reasonable assurance that urban runoff TMDL wasteload allocations will be met, including the projected goal of controlling 3 kg/year of PCBs via green infrastructure by 2040.

3. Set targets for GI implementation and identify future actions needed to address the adverse water quality impacts of urbanization and urban runoff on receiving waters. [1]

[1] Letter from San Francisco Bay Regional Water Quality Control Board to Municipal Regional Stormwater NPDES Permit Permittees. February 5, 2019.

b. Belmont Context Description and Background

Belmont is located in San Mateo County on the San Francisco Peninsula, halfway between San Francisco and San Jose. Covering 4.7 square miles, Belmont has bay marshlands and sloughs in the eastern area and hilly terrain in the western portions of the City. Belmont is at sea level along the marshlands and rises over 800 feet in elevation in the western areas. The City is bisected by El Camino Real, Alameda de las Pulgas, and the Caltrain commuter rail line and transportation corridor in the north-south direction. Ralston Avenue connects the City and the region in an east-west direction from Highway 92/Interstate 280 to US 101. Belmont is within easy driving distance of the Pacific coast, three major airports, and major employment centers including San Francisco, Silicon Valley, and the East Bay.

Belmont is a quiet residential community in the midst of the culturally and technologically rich Bay Area. The town center, also known as Belmont Village, is centered on Ralston Avenue and El Camino Real. Belmont Village is a designated a Priority Development Area (PDA), and has a variety of commercial, office, public, and residential uses. Additional mixed-commercial uses are found along El Camino Real, north and south of Belmont Village. There are excellent public and private schools in Belmont, as well as the only university in San Mateo County, Notre Dame de Namur. Belmont is also known for its wooded hills, views of the San Francisco Bay, and stretches of open space which make up 12.5%, or about 377 acres, of land in the City.

Of the City's 14 residential neighborhoods, most are located in the Belmont hills with low density, single family homes. These residential areas are nearly half of the land area in the City, at 46%, or 1,388 acres. There are several residential neighborhoods east of El Camino Real as well, with predominantly single-family dwellings. The City also holds several pockets of multi-family housing; the largest is located around Ralston Avenue and Alameda de las Pulgas, and several other multi-family developments are clustered close to El Camino Real.

Streets constitute one of the largest publicly owned spaces in the City; the bulk of Belmont's roadways are already constructed. Proposed roadway improvements are intended to address issues on Belmont's built-out roadway network, including congestion and safety concerns on key corridors. Planned projects include Belmont Village PDA, the El Camino Real corridor, the area east of US 101, the Harbor Industrial Area, Carlmont Village, and Davis Drive. Roadway improvement projects are at various stages of planning within Belmont. The City is committed to creating safer and more comfortable complete streets for all users, as well as opportunities to implement complementary green street infrastructure that can support complete street goals while achieving environmental benefits for stormwater quality and the community.

c. Green Infrastructure Plan Development Process

Belmont has engaged in a comprehensive and coordinated process in the development of the City's Green Infrastructure Plan. As a member agency of the San Mateo Countywide Water Pollution Prevention Program (Countywide Program) and its Green Infrastructure Committee, the City jointly collaborated with the Countywide Program, it's consultants, and other member agencies in the development and integration of some of the materials required to fulfill or to support the preparation of GI Plans. Belmont staff has participated on a quarterly basis with the Countywide Program's GI Committee for the past two years to review and discuss GI Plan related elements and approaches, and related documents including the San Mateo Stormwater Resource Plan, Green Infrastructure Reasonable Assurance Analysis, Bay Area Stormwater Management Agencies Association's regional sizing for constrained non-regulated street projects, and the San Mateo Sustainable Streets Master Plan. This ongoing support that helped with coordination and providing template material.

Belmont has worked extensively over the last three years to work with staff, decision makers, and the public to identify opportunities to develop it's GI Plan to meet achieve the mandates of the MRP. Belmont's GI Plan was developed in collaboration with multi-disciplinary interdepartmental City staff, City decision makers, and the community in coordination with City consultants. Discussions included no missed opportunities for green

infrastructure planning and implementation. Various inter-departmental City staff have been working to create a regional project, the Twin Pines Park regional project, which also provides several other opportunities to incorporate green infrastructure. In addition, the City is investigating further opportunities to implement green infrastructure.

d. Summary of Green Infrastructure Plan Elements

This GI Plan contains the elements required by the MRP. Table 1-1 below links each section of this Plan to the applicable MRP provision.

Table 1-1: Green Infrastructure Plan Sections and Applicable MRP Provisions for Green Infrastructure Planning and Implementation

Chapter of Green Infrastructure Plan	Applicable MRP Provision
1. Introduction	C.3.j
2. Green Infrastructure Project Identification and Prioritization	C.3.j.i.(2)(a), C.3.j.i.(2)(b), and C.3.j.i.(2)(j)
3. Belmont Green Infrastructure Implementation	C.3.j.i.(2)(a), C.3.j.i.(2)(b), C.3.j.i.(2)(c), and C.3.j.i.(2)(d)
4. Green Infrastructure Project Tracking and Mapping	C.3.j.i.(2)(d)
5. Green Infrastructure Integration with Other Planning Documents and Legal Mechanisms	C.3.j.i.(2)(h), C.3.j.i.(2)(i), and C.3.j.i.(3)
6. Green Infrastructure Guidance	C.3.j.i.(2)(e), C.3.j.i.(2)(f), and portion of C.3.j.i.(2)(g)
7. Green Infrastructure Hydraulic Sizing	C.3.j.i.(2)(g)
8. Evaluation of Funding Opportunities	C.3.j.i.(2)(k)
9. Outreach and Education	C.3.j.i.(4)
10. Appendices A. Belmont-specific Prioritization Factors and Criteria with Weighting Tables B. Refined Belmont Evaluation for Green Infrastructure Opportunities *C. Example GI Plan Text Summarizing Results of the Reasonable Assurance Analysis* *D. Belmont-specific Model Strategies and Implementation Measures Identified by the Countywide Program Green Infrastructure Reasonable Assurance Analysis*	

2.0 Green Infrastructure Project Identification and Prioritization

a. Prioritization Approach

This chapter describes the prioritization and mapping approach and process for green infrastructure projects as required in Provision C.3.j.i.(2)(a) and provides a summary description of prioritized green infrastructure projects and opportunities by type per Provision C.3.j.i.(2)(b). In addition, prioritized projects for early implementation are summarized; the discussion of early implementation outlines a workplan to complete prioritized projects per Provision C.3.j.i.(2)(j).

The San Mateo Countywide Stormwater Resource Plan (SRP) was used to identify, prioritize, and map areas for planned and potential green infrastructure project opportunities. In addition, a secondary process was developed for and used by Belmont to refine the countywide process to develop City-specific criteria for prioritizing potential public green infrastructure opportunities and other opportunities for private development and private/public partnerships. This allows the City to modify countywide factors and include new factors to address conditions not included in the countywide prioritization or to address City preferences or circumstances that are unique to Belmont. Both processes developed maps and project lists which can be incorporated into the City's long-term planning and capital improvement processes. A map and listing of these prioritized opportunities is included in this section.

The Countywide Program is developing a Reasonable Assurance Analysis (RAA) to first identify and map a "recipe" of projects and wasteload allocation reduction goals for implementation by 2020, by 2030, and by 2040, and secondly, to develop a tracking system for completed projects. Refer to Chapter 3 for further information.

b. Project Identification and Prioritization

Countywide Process[2]

The SRP includes an evaluation of project benefits addressing several key metrics: Water Quality, Water Supply, Flood Management, Environmental, and Community benefits. First, suitable public parcels and public rights of way were identified. Hydrologic Response Units (HRUs), small spatial units containing unique attributes, were used to evaluate watershed processes to prioritize stormwater and dry weather runoff capture projects. The following attributes were assessed: land use, impervious cover, hydrologic soil groups, and slope. Based on these key metrics, watershed characteristics, and watershed processes, several green infrastructure stormwater projects were identified and prioritized to address water quality impairments, reduce flooding, and provide more natural groundwater recharge throughout the County.

A screening and prioritization method was developed, for the SRP, to reasonably assess stormwater capture projects, with an emphasis on projects that offered the greatest opportunity for multiple benefits. Higher prioritization was given to projects that addressed flood-prone streams, those located in PCBs-interest areas, and ones that drain to TMDL waters.

Three types of stormwater management project opportunities were identified throughout the County:

Regional Stormwater Capture Projects – These consist of facilities that capture and treat stormwater from large drainage areas or watersheds. The primary objective of regional projects is often flood attenuation, but many also contain a water quality treatment and/or infiltration component. In some cases, the diverted flows are returned after treatment or are used for irrigation.

[2] San Mateo Countywide Stormwater Resource Plan, 2017.

Green Streets – These consist of stormwater capture infrastructure in public rights of way. Green streets are intended to capture only runoff from the street and adjacent land that drains to the street.

Low Impact Development (LID) Retrofit – This includes green infrastructure, is a form of on-site urban infrastructure design that uses a suite of technologies intended to imitate pre-urbanization (natural) hydrologic conditions. LID and green infrastructure are meant to capture, remove (through infiltration), and slow runoff to reduce the impacts of the urban landscape.

Separate prioritization scoring processes were developed for each of the three project types. A project's priority score was determined by summing all of the points assigned from the evaluated physical characteristics, proximity to areas of interest, potential for co-locating projects, and other various multiple benefits. While the three project types share many of the same criteria factors, each contains a set of factors that are specific to that particular project type. All public parcels and streets throughout the county were prioritized and the results were analyzed at the countywide scale and city-scale. The scoring was used to rank the projects by cost benefit, watershed, jurisdiction, and project type.

Belmont-specific Process

Due to Belmont's unique existing conditions, City goals and policies, and other factors, it was important to customize the countywide project identification and prioritization process to develop a Belmont-specific prioritization process. This allows the City to modify countywide prioritization factors and scoring and include new prioritization factors to address conditions not included in the countywide process and to focus upon City preferences and circumstances that are specific to Belmont.

Prioritization factors, scoring, and weighting used in the Countywide process were assessed and then modified, retained, or eliminated as appropriate to reflect Belmont-specific priority criteria. New Belmont-specific criteria was determined and included, and some factors were used as screening criteria before the projects were prioritized. Belmont-specific screening and prioritization criteria factors were also used to assess the three different types of projects – regional (water capture) projects, green streets, and parcel-based.

The following table, Table 2-1, illustrates the various screening and prioritization criteria factors that were used to identify, prioritize, and map green infrastructure opportunities within Belmont.

Table 2-1: Screening and Prioritization Criteria Factors of the San Mateo SRP and Belmont-specific Prioritization Process

Prioritization Criteria and Screening Factors	**Regional Stormwater Capture**	**Green Streets**	**Public/Private Parcel-based GI Projects**
San Mateo SRP Prioritization Factors Retained or Modified			
Parcel land use (modified for Belmont-specific criteria)	X		X
Impervious area (%)	X	X	X
Parcel size (acres)	X		
Street Type (modified for Belmont-specific criteria)		X	
Hydrologic soil groups	X	X	X
Slope (%)	X	X	X
Proximity to flood-prone channels (miles)	X	X	X
Contains PCBs risk areas	X	X	X
Currently planned by City or co-planned with other City projects	X	X	X
Drains to TMDL water	X	X	X
Safe Routes to School program		X	
Above groundwater basin	X	X	X
Augments water supply	X	X	X
Water quality source control	X	X	X
Creates or enhances habitat	X		
Community enhancement (removed/modified for Belmont-specific criteria)	X	X	X
Belmont-specific Prioritization criteria			
Complete streets projects (adjacency)	X	X	X
Streets with existing storm drains and inlets	X	X	X
Streets identified for future storm drains and other drainage improvements	X	X	X
Areas with localized flooding	X	X	X
Project located within ¼ mile of identified RHNA site or other affordable housing site	X	X	X
Project identified in approved master plan, community plan, policy, etc.	X	X	X
Project is within a Planned Development Area (PDA)	X	X	X
Project is part of a street improvement at a high-injury or high-frequency collision intersection or street segment		X	
Within drainage area of Twin Pines Park Regional Project	X	X	X
Parcel Ownership	X		X
Parcel ownership and land use	X		X
Slope (%)	X	X	X

The project prioritization process was a two-step process. Screening factors were used to screen out conditions that are detrimental to green infrastructure. In this case, that included certain land uses, ownership, and slope. After the prioritization criteria factors were identified, they were assigned a score between 0 and 5 with the highest number representing the most important or significant aspect. Some criteria were then weighted to emphasize specific issues identified as having a higher level of importance for the City. A few of the countywide factor scores and weighting factors were adjusted to reflect Belmont-specific conditions and priorities. Refer to Appendix A for a table illustrating the screening and prioritization criteria factors with assigned scores and weighting factors.

A project's overall priority score is the sum of the individual weighted prioritization scores. Because each project type's prioritization method contains a different mix of screening and prioritization factors, and scoring and weighting varies between project types, the scores cannot be directly compared between different project types.

Following the SRP method of categorizing the level of project priority, the recalculation of green infrastructure project opportunities using Belmont-specific criteria and scoring of selected green infrastructure opportunities were prioritized as High, above the 90th percentile; Medium, above the 60th percentile; and Low, below the 60th percentile.

c. Identification of Prioritized Green Infrastructure Project Opportunities

Existing and Planned Projects and Potential Opportunities

Existing, planned, and potential green infrastructure projects were identified by a range of methods. Existing projects were identified by using the City's list of completed projects. Planned projects are C.3 regulated and other green infrastructure projects in the planning and design phase that the City is tracking or are currently under construction. These include projects related to new future development or remodeling of school facilities, green streets, and the Twin Pines water capture project currently undergoing planning. These projects are expected to be completed during the 2015 to 2020, 2020 to 2030, or 2030 to 2040 time periods.

The City's Pavement Management Program was reviewed to determine if projects would be able to accommodate green infrastructure. It was found that this program is primarily focused on street pavement maintenance, with perhaps only the "heavy rehabilitation" or "reconstruction" classifications having the ability to consider including green infrastructure and other improvements into the project. The Capital Improvement Projects (CIP) list was reviewed to determine if existing planned and/or funded projects are opportunities for green infrastructure. The review found that some CIP projects related to new planning or the rehabilitation of streets and recreation facilities may provide the opportunity to integrate green infrastructure. These opportunities include various park upgrade improvements and park master planning for the Belmont Sports Complex, McDougal field and play ground, Twin Pines Park, Hallmark Park, Belameda Park, and Barrett Community Center master plan, and street improvement projects such as the Four Corners Traffic Study project. Longer term future projects not on the CIP list, such as bicycle and other complete street improvements, the Twin Pines Park regional project, and safe routes to schools projects, were considered and included in the analysis for identifying potential green infrastructure opportunities. Other considerations included identifying streets and intersections that could easily accommodate green infrastructure or complete streets improvements – these were typically those with leftover spaces created by intersecting street alignments and on wider streets; and while not mapped, private development parcels that offer the potential for private or shared public/private or private provision of green infrastructure. In addition, potential green infrastructure projects are expected to happen opportunistically as prospects and funding avail themselves.

Potential future green infrastructure opportunities have been identified by known projects in the planning and design phase, those C.3 regulated projects anticipated to occur between 2020 and 2040; City parcels that offer the potential for green infrastructure; other public and private parcels that offer the potential for shared or expanded projects; streets that could accommodate green infrastructure; intersections that are wide or have unprogrammed area and could accommodate green infrastructure; and future projects or locations that are identified City capital improvement projects or in a recognized policy or plan such as complete street improvements, safe routes to schools projects, flood control, and being within a Priority Development Area (PDA).

A customized list of "higher priority" potential green infrastructure opportunities was developed based upon factors specific to Belmont. First, the SRP's prioritized regional projects, green streets, and parcel green infrastructure project opportunities were reviewed and assessed. Secondly, Google Earth and Google StreetView were used to perform a more detailed evaluation of streets, intersections, and public and private institutional parcels that could include potential green infrastructure opportunities. This information was brought into the GIS data sets for analysis, which was then reviewed, and in some cases, adjusted to better reflect certain conditions, such as impervious area on a street or parcel. The goal of this assessment was to identify public and private locations that could accommodate green infrastructure that could be implemented with relative ease in the near term, that could be more quickly or easily implemented if funding was obtained, and that have the potential for public/private partnerships. Additional detail can be found in Appendix B. While Belmont owned parcels and other publicly and privately-owned parcels where evaluated, Belmont only has control over City owned parcels to direct the timing of implementation.

Regional Water Capture Projects

Belmont has identified a regional project at Twin Pines Park to provide multiple benefits to the City. The project has the potential to provide multiple benefits to the City, could contribute to limiting downstream flooding, and improving water quality. The GI RAA includes this project as part of the countywide regional project system. The GI RAA discusses how regional projects are more cost-effective than other public green infrastructure investment, such as green streets. Belmont intends to prioritize the use of regional projects to help meet their pollutant load reduction requirements. Due to the nature of these types of projects, a longer lead time for planning and a higher level of funding for planning, construction, and operations and maintenance is needed over other project types.

Green Streets

The City will be pursuing opportunities for green streets and green intersections to help manage and treat stormwater runoff and provide complete and sustainable streets, traffic calming, urban greening, neighborhood enhancement, and other community-wide benefits. Due to the hillside nature of much of the City, many streets do not provide acceptable slope gradients for green infrastructure. This, along with poor infiltrating soils and challenges in obtaining funding for street redesign, construction and maintenance, limits opportunities for green streets. However, there are pockets throughout the City in which streets and intersections can be retrofitted to include green infrastructure. Streets such Ralston and Old County Road will be retrofitted for complete street or infrastructure provision and offer the potential to integrate green infrastructure as part of the project.

Public and Private Parcels

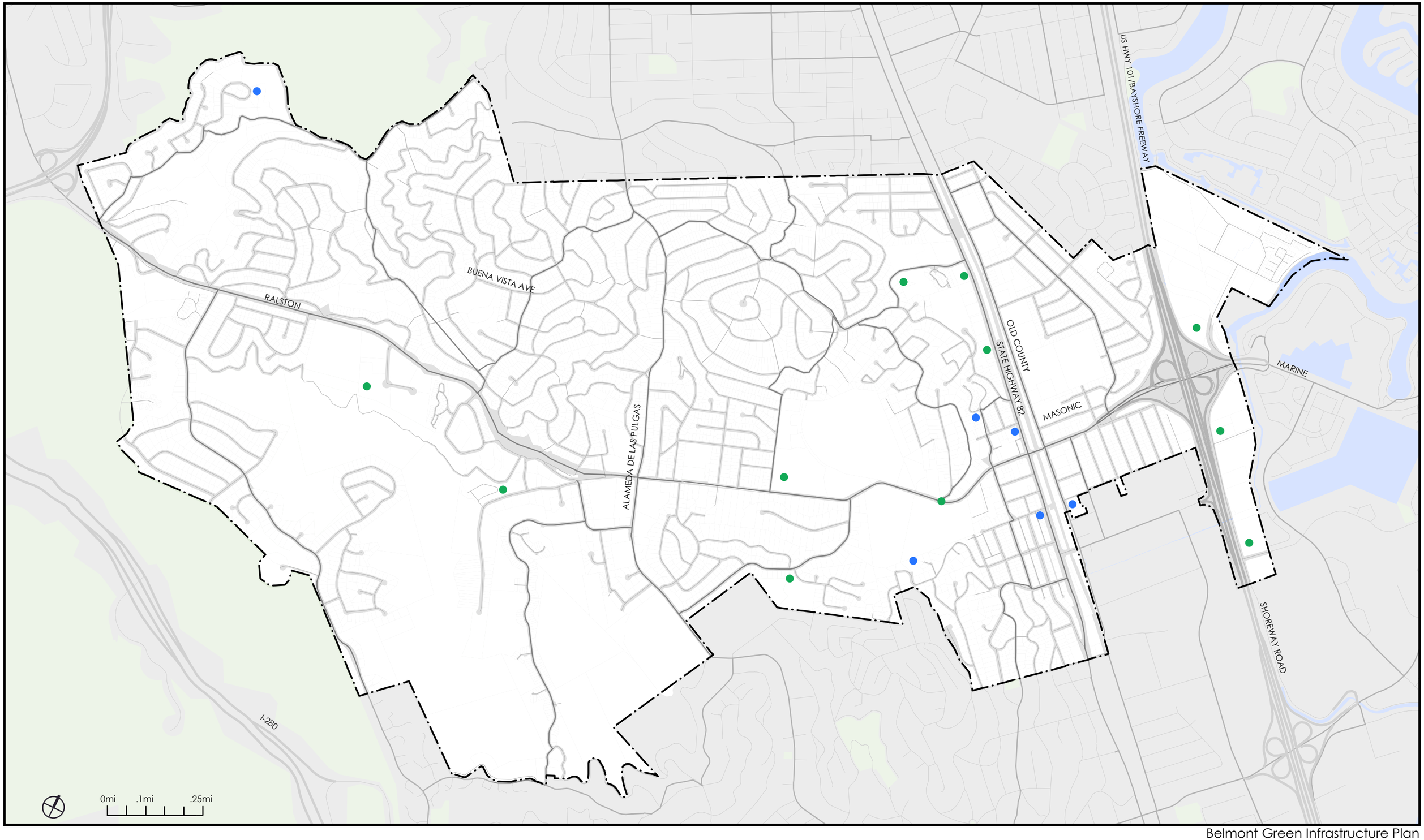
Public parcels, both City and other public agencies such as school districts, and private institutional uses such as schools were identified and assessed for potential individual or shared green infrastructure opportunities. Many of these parcels offer the ability to integrate green infrastructure facilities in a variety of locations and of differing measure types, such as in parking lots, around buildings, within landscape areas, and along street frontages. Belmont owned sites, such as City Hall and various park and recreation areas including O'Donnel, Barret, and Ciprani, can be considered a higher priority as they are under the control of the City for the

implementation of green infrastructure and other improvements. Many private and non-City owned public parcels were evaluated as they typically offer larger areas to integrate green infrastructure facilities within the site due to the existence of open space, parking lots, and ball fields, as well as offer opportunities for project partnerships. In addition, new and redevelopment commercial and residential projects will be evaluated under the City's "no missed opportunities" policy to require certain projects to add green infrastructure and/or to meet C.3 Regulated Project requirements. Refer to Chapter 5 for further information.

The following tables and maps show the outcome of the Belmont-specific prioritization process and evaluation of green infrastructure opportunities of higher priority projects (those parcels and streets/intersections identified above as opportunities for green infrastructure on City and other public agency and private potential projects) and ranks the prioritized potential opportunity projects. This list provides City staff the preferred "short list" of prioritized projects to plan for and implement as funding, opportunities, and the need arises. As the opportunities identified in this process are implemented, new green infrastructure opportunities will be added to the list. The green infrastructure and LID that will be implemented on private parcels or along their frontages as part of "no missed opportunities" are not included in these tables and maps as the timing and location of the projects cannot be anticipated.

Lists and maps of completed, planned, and potential projects will be updated, as needed, to provide information relative to changed status, the identification of funding options, new opportunities, or if a regional approach scenario is implemented countywide.

Figure 2-1 and Table 2-2 show the constructed and planned green infrastructure projects in Belmont. A map and list illustrating the resulting Belmont-specific prioritized potential green infrastructure projects is found in Figure 2-2 and Tables 2-3 and 2-4. In addition, other public parcel and street project opportunities identified in the SRP are represented in Figure 2-2.



Belmont Green Infrastructure Plan

Completed and Planned Green Infrastructure Projects

● CONSTRUCTED ● PLANNED

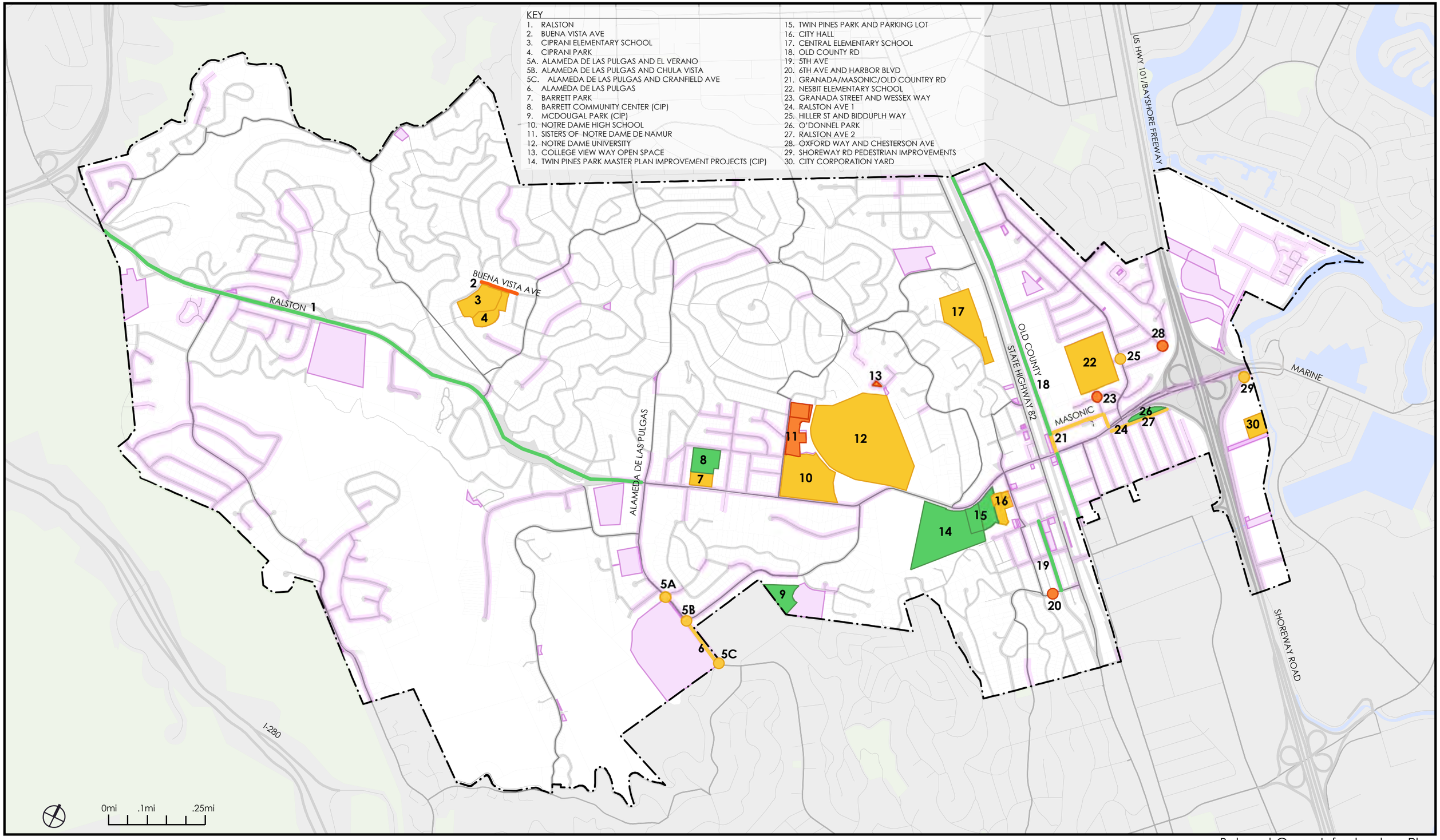
Figure 2-1: Completed and Planned Green Infrastructure Projects

Table 2-2. Completed and Planned Green Infrastructure Projects

Project Name	GIS Data Base Index No./City Project ID	APN/Location	Ownership	Size (ac)	Description
Completed Projects (Public Other Agency and Private)					
Commercial Project	Belmont 2	044-162-150, -160 400-490 El Camino Real	Private	1.84	Parcel
Homewood Suites	Unknown	1201 Shoreway Road	Private	Unknown	Parcel
Charles Armstrong School	Belmont-BEL-3	045-122-190/ 1405 Solana Drive	Private	0.39	Parcel
Crystal Springs Uplands School (CSUS)	Belmont-BEL-5	043-340-170/10 Davis Drive	Private	6.64	Parcel
Notre Dame de Namur University	Belmont-BEL-6	044-360-120/1500 Ralston Ave	Private	2.21	Parcel
Belmino	Belmont-11	044-201-190, -230, 044-222-060/576-600 El Camino Real	Private	0.9	Parcel
SummerHill Cambridge Apartment Complex	Belmont-4	045-031-010/2440 Carlmont Drive	Private	4.63	Right of way
Autobahn Motors	Belmont-15	040-360-530/700 Island Parkway	Private	1.35	Parcel
Springhill Suites Hotel	Unknown	1401 Shoreline Road	Private	Unknown	Parcel
Nikon	Belmont-1011-1	040-371-170/1399 Shoreway Road	Private	5.38	Parcel
Davey Glen Park Detention Project	Unknown	Across 500 Davey Glen Road	Public – City	Unknown	Parcel
South Road Traffic Signal	Belmont 16	South Road & Ralston Improvements	Public – Other	Unknown	Intersection
Planned Projects (Public, Public Other Agency, and Private)					
Windy Hill	Belmont 8	046-031-070, -080, -020/ 1325 Old County Rd	Private	2.09	Parcel
Firehouse Square	Belmont 9	045-244-010, -160, -150/ 1300 El Camino Real	Private	1.25	Parcel
Talbryn Subdivision	Belmont 10	045-201-190/ 1320 Talbryn Drive	Private	1.47	Parcel
Unnamed Project	Belmont 12	045-152-350/ 800 Laurel Ave	Private	1.58	Parcel
Affordable Housing Project	Belmont 13	045-163-070/ 900 El Camino Real	Private	0.43	Parcel
Bishop Road Subdivision	Belmont 14	043-021-010, -380/ 2009, 2011, 2013 Bishop Road	Private	8.0	Parcel

KEY

1. RALSTON
2. BUENA VISTA AVE
3. CIPRANI ELEMENTARY SCHOOL
4. CIPRANI PARK
5A. ALAMEDA DE LAS PULGAS AND EL VERANO
5B. ALAMEDA DE LAS PULGAS AND CHULA VISTA
5C. ALAMEDA DE LAS PULGAS AND CRANFIELD AVE
6. ALAMEDA DE LAS PULGAS
7. BARRETT PARK
8. BARRETT COMMUNITY CENTER (CIP)
9. MCDOUGAL PARK (CIP)
10. NOTRE DAME HIGH SCHOOL
11. SISTERS OF NOTRE DAME DE NAMUR
12. NOTRE DAME UNIVERSITY
13. COLLEGE VIEW WAY OPEN SPACE
14. TWIN PINES PARK MASTER PLAN IMPROVEMENT PROJECTS (CIP)
15. TWIN PINES PARK AND PARKING LOT
16. CITY HALL
17. CENTRAL ELEMENTARY SCHOOL
18. OLD COUNTY RD
19. 5TH AVE
20. 6TH AVE AND HARBOR BLVD
21. GRANADA/MASONIC/OLD COUNTRY RD
22. NESBIT ELEMENTARY SCHOOL
23. GRANADA STREET AND WESSEX WAY
24. RALSTON AVE 1
25. HILLER ST AND BIDDUPLH WAY
26. O'DONNEL PARK
27. RALSTON AVE 2
28. OXFORD WAY AND CHESTERSON AVE
29. SHOREWAY RD PEDESTRIAN IMPROVEMENTS
30. CITY CORPORATION YARD



Belmont Green Infrastructure Plan

Belmont-Specific Prioritization Opportunities

HIGH PRIORITY | MEDIUM PRIORITY | LOW PRIORITY

San Mateo Stormwater Resource Plan Prioritization Opportunities

Other Potential Opportunities

Figure 2-2: Belmont Prioritized Potential Green Infrastructure Opportunities

Regional Projects, Streets, and Parcels

August 2019

Table 2-3. Belmont-specific Identified Potential Green Infrastructure Opportunities

Location	Potential	Type
Potential Belmont-specific Prioritization Projects (Public, Public Other Agency, and Private)		
Twin Pines Park and parking lot (CIP)	High	Regional Project/ Parcel- City
Barrett Community Center (portion under CIP)	High	Parcel- City
McDougal Park (CIP)	High	Parcel- City
O'Donnel Park	High	Parcel- City
Old County Road	High	Street
5th Avenue, between O'Neil and Harbor	High	Street
Ralston, between Rte 92 and Alameda de las Pulgas	High	Street
City Hall	Medium	Parcel- City
Barrett Park	Medium	Parcel- City
City corporation yard	Medium	Parcel- City
Ciprani Park	Medium	Parcel- City
Granada/Masonic/ Old County Road	Medium	Street
Ralston Ave (1), between Granada and Hiller	Medium	Street
Alameda de las Pulgas, between Cranfield and Chula Vista Dr (Four Corners Traffic Study Project)	Medium	Street
Ralston Ave (2), between Hiller and Kedith	Medium	Street
Shoreway Road Pedestrian Improvements	Medium	Street
Hiller St and Biddulph Way	Medium	Intersection
Alameda de las Pulgas and Chula Vista (Four Corners Traffic Study Project)	Medium	Intersection
Alameda de las Pulgas and El Verano (Four Corners Traffic Study Project)	Medium	Intersection
Alameda de las Pulgas and Cranfield (Four Corners Traffic Study Project)	Medium	Intersection
Central Elementary School	Medium	Parcel- Other Public
Ciprani Elementary School	Medium	Parcel- Other Public
Nesbit Elementary School	Medium	Parcel- Other Public
Notre Dame High School	Medium	Parcel- Private
Notre Dame de Namur University	Medium	Parcel- Private
College View Way Open Space	Low	Parcel- City
Buena Vista Ave, between Monserat and Palmer	Low	Street
Granada St and Wessex Way	Low	Intersection
6th Ave and Harbor Blvd	Low	Intersection
Oxford Way and Chesterson Ave	Low	Intersection
Sisters of Notre Dame de Namur	Low	Parcel- Private

d. Workplan to Complete Alternative Compliance and Early Implementation

Prioritized projects identified as part of a Provision C.3.e Alternative Compliance program or part of Provision C.3.j Early Implementation are required to prepare a Workplan to ensure completion of those prioritized projects. Those projects that fall under these Provisions are summarized below. A Workplan has been developed to identify the approach, scheduled timeframes, and other key information for implementing these projects.

Belmont has identified the following projects as part of a Provision C.3.e Alternative Compliance program (a special project) or a part of Provision C.3.j.ii Early Implementation. These are public and private green infrastructure projects that are already planned for implementation during the permit term and infrastructure projects planned for implementation during the permit term that have potential for green infrastructure measures.

1. Firehouse Square Apartments

Location: 1300 El Camino Real

Description: Residential condominium project of 66 units, total site area of 0.75 acres, 88 gross density du/ac, special project category: C location parking.

The project consists of two parcels; one for apartments and one for townhouses, and which has been identified as a Special Project, based on Special Project criteria provided in Provision C.3.e.ii of the Municipal Regional Stormwater Permit (MRP).

The project site was reviewed for the feasibility of onsite LID treatment; the review indicated that it was infeasible to treat all of the C.3.d amount of runoff with LID treatment due to a range of constraints and the provision off-site LID treatment was found to be infeasible. To address these constraints, the project has proposed to drain to vault-based media filters.

The plan utilizes treatment of portions of 5th Avenue to offset untreated impervious surface on Civic Lane, and will include full trash capture measures conforming to Section C.10 of the MRP, on-site LID site design measures, self-treating areas designed to store and infiltrate the rainfall that lands on it and the impervious surface that drains it, and planting or preserving interceptor trees.

Status: The City has recently approved sale and lease agreements for the properties and various development entitlements and permits. The project is expected to move into construction in the near future.

As per Condition of Approvals, the project is subject to:

1. A maintenance agreement is required to be executed between the City and the Developer prior to recordation of final map. The Developer is to maintain:
    - Stormwater treatment areas inside and along the frontage of the properties (including sidewalk area).
    - Sidewalks, driveways, curb and gutter, street furniture, decorative street lights, landscaping, street trees along the frontage of property up to the edge of pavement.
    - Park area shared by the two lots.
2. Provide full trash capture measures conforming to Section C.10 of the MRP to treat the site.
3. Applicant shall adequately demonstrate that the stormwater management plan for the apartments and townhouses can meet the requirements of C.3 individually. This is to confirm that in the case of phased construction, the two portions of the project can still meet C.3 requirements without the other.

Workplan: Staff will continue to review and track the project during the course of project approvals and construction until the project is complete to ensure that stormwater and other requirements are met.

2. Twin Pines Park Water Capture Project

Location: Twin Pines Park (in park and parking lots)

Description: Twin Pines Park has been identified as a potential location for a regional stormwater capture project. Belmont Creek is the primary receiving water for the City and runs through the park, and is identified as a flood-prone channel impacting downstream properties. Several locations were explored at this site to divert runoff to a proposed subsurface infiltration gallery. The creek is not channelized at this segment and flows naturally. Although diversion from the creek would allow for the largest potential capture area, diversion from a natural channel is not feasible at this location. A nearby storm drain was identified as the most feasible opportunity for stormwater capture. The storm line has an outfall directly to the creek, so a regional project would still mitigate downstream flooding. The project concept consists of an offline subsurface infiltration chamber. The park provides the opportunity to treat runoff from a 30-acre area that is primarily residential and drains directly Belmont Creek. The project would capture flows and associate pollutant loadings from a small portion of the upper Belmont Creek.

Status: The Twin Pines Park Master Plan has been approved by Council. The plan recommendations include two potential sites where detention basins could be incorporated as proposed by the Belmont Creek Watershed Management Plan. The City continues to work with the San Mateo County Flood Resilience Program Manager to seek grant funding for design and construction funding.

3. Future Development Projects

Location: Citywide

Description: The MRP discusses “no missed opportunities” under the Early Implementation of Green Infrastructure Projects section, and which outlines the need of jurisdictions to consider and integrate green infrastructure into all projects, as feasible. City staff already evaluates capital improvement projects (CIPs) for opportunities to implement green infrastructure.

For private projects currently under review or to be submitted in the future, staff will integrate the MRP’s “no missed opportunities” into the City’s standard project review process and as the authority to require green infrastructure improvements. City staff has and will work with developers to evaluate and implement appropriate green infrastructure improvements as feasible, including along street frontages and on-site.

Status: City will continue to consider, evaluate, and require green infrastructure improvements in public and private projects as feasible.

3.0 Belmont Green Infrastructure Implementation Goals[3]

This chapter provides an overview of the purpose of the San Mateo Countywide Program GI Reasonable Assurance Analysis and a summary of RAA results for Belmont to serve as stormwater improvement goals that set the stage for an adaptive management approach.

a. Overview

The MRP requires the development of GI Plans (Provision C.3) and Polychlorinated Biphenyls (PCBs) and Mercury Control Measure Implementation Plans (Provisions C.11 and C.12) that provide the necessary pollutant load reductions to meet Total Maximum Daily Load (TMDL) wasteload allocations, or the maximum load, or amount, of pollutants each discharger of waste is allowed to release into a particular waterway[4], over specified compliance periods. A key component of these plans is a GI RAA[5] that quantitatively demonstrates that proposed control measures will result in sufficient load reductions to meet wasteload allocations for municipal stormwater discharges to the San Francisco Bay.

The City/County Association of Governments (C/CAG) of San Mateo County, via its Countywide Program, led a county-wide effort to develop a GI RAA to determine load reductions to meet wasteload allocations among San Mateo County permittees, and set goals for the amount of green infrastructure each permittee needs to achieve for their portion of the countywide load reductions the MRP assigns to green infrastructure. The City's GI Plan must therefore reasonably be expected to achieve the stormwater improvement goals outlined in the countywide GI RAA.

b. Preliminary Identification of Opportunities for Green Infrastructure Projects

To support the GI RAA and GI Plans, C/CAG has undertaken a number of planning efforts to identify opportunities for green infrastructure implementation. The following is a summary of those efforts.

Green Infrastructure for New Development and Redevelopment

The MRP includes Provision C.3 for the integration of green infrastructure within new development and redevelopment. LID and green infrastructure are implemented throughout the City as new development and redevelopment occurs. The reduced volumes of urban runoff and associated pollutant loads can be considered as part of the load reductions attributed to implementation of green infrastructure. C/CAG worked with San Mateo County permittees to compile information on green infrastructure and LID practices that have been implemented within new development and redevelopment since 2003, the baseline year for calculation of wasteload allocations.

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[3] This section is based upon template materials provided from the *Reasonable Assurance Analysis and Green Infrastructure Implementation Goals* and *Curves - Belmont*. Paradigm, 2019. Refer to Appendix C and Appendix D for more detailed information.

[4] Glossary, Federal Remediation Technology Roundtable. https://definedterm.com/a/document/10661.

[5] The San Mateo GI RAA is comprised of two documents:

1. *Phase I Baseline Modeling Report* – Provides documentation of the development, calibration, and validation of the baseline hydrology and water quality model, and the determination of PCBs and mercury load reductions to be addressed through green infrastructure implementation.
2. *Phase II Green Infrastructure Modeling Report* – Provides documentation of the application of models to determine the most cost-effective green infrastructure implementation for each municipality, setting stormwater improvement goals for the GI Plan.

In support of the GI RAA to model pollutant load reductions, an estimate of the land area and location of new and redevelopment within San Mateo County required to achieve new development and redevelopment (C.3 regulated) green infrastructure stormwater management improvements by 2040 was developed. The overall estimate was then translated into estimates for 2015 to 2020, 2020 to 2030, and 2030 to 2040.

These estimates were made by first estimating the land area that can be expected to develop between 2015 and 2040. A range of information was used to make these estimates including the available land area and the demographic files for new households and jobs that were developed and used for the San Mateo Countywide Transportation Plan. The Countywide Program's consultants used a four-step process to estimate future new and redevelopment. The first step identified available land and the land's capacity for new mixed use, residential, and non-residential development, based on assessors' data, member agency policies, and other factors. The second step converted countywide population and employment growth projections into demand for single-family and multi-family homes, and square feet of various non-residential uses. Step three allocated the projected demand to the available land supply. Step four adjusted available land area and expected intensity of development to get a "fit" between supply and demand where the initial allocation process did not indicate enough land for projected development. This information was documented for each jurisdiction, including Belmont, and jurisdictions were given the opportunity to comment on the initial estimates and a revised set of estimates.

These assessments found that Belmont is projected to experience 41 acres of new and redevelopment growth in the land uses that typically generate green infrastructure per the requirements of the MRP, such as single-family subdivisions, multi-family, mixed use, and commercial development between 2015 and 2040.

Some land uses, such as schools, are not accounted for in the countywide land development projections as they do not align with either residential or a quantifiable employment use. Many school sites are present in Belmont, and these uses present other opportunities to provide green infrastructure that can count towards Belmont's load reduction requirements.

Countywide Stormwater Resource Plan (SRP)

The SRP is a comprehensive plan that identifies and prioritizes thousands of green infrastructure project opportunities throughout San Mateo County and within each municipal jurisdiction. Prioritized project opportunities include:

- Large regional projects within publicly owned parcels (e.g., parks) that infiltrate or treat stormwater runoff generated from surrounding areas (e.g., diversion from neighborhood storm drain system; diversions from creeks draining large urban areas);
- Retrofit of publicly owned parcels with green infrastructure that provide demonstration of onsite green infrastructure and LID designs; and,
- Retrofit of public street rights of way with green infrastructure, referred to as green streets.

The SRP includes a multi-benefit scoring and prioritization process that ranks green infrastructure project opportunities based on multiple factors beyond pollutant load reduction (e.g., proximity to flood prone channels, potential groundwater basin recharge).

The above efforts and resulting technical products provide preliminary identification of opportunities for green infrastructure projects. These green infrastructure project opportunities, along with the estimate of new and redevelopment green infrastructure discussed above, serve as the foundation for the GI RAA and Belmont's GI Plan as strategies are developed for implementation plans to meet the PCBs and mercury load reduction goals per the TMDL.

Description of the San Mateo Countywide GI RAA Model

Through the GI RAA, C/CAG performed a comprehensive, countywide modeling effort to provide:

- Simulation of baseline loads of PCBs and mercury for each of the County's watersheds and municipal jurisdictions discharging to San Francisco Bay;
- Estimation of necessary load reduction goals to meet requirements of the MRP and TMDL wasteload allocations; and,
- Determination of the amount of green infrastructure needed to address load reduction goals based on project opportunities.

The GI RAA also provides analysis of alternative implementation scenarios through cost-benefit optimization that can inform cost-effective green infrastructure implementation within each municipal jurisdiction, including Belmont. These results set goals for GI Plans developed by each Permittee.

The primary goal of the GI RAA is to quantitatively demonstrate that GI Plans and Control Measure Implementation Plans will result in load reductions of PCBs and mercury sufficient to attain TMDL wasteload allocations and the component stormwater improvement goals to be achieved with green infrastructure. Based on the baseline hydrology and water quality model, the GI RAA determined that a 17.6% reduction in PCBs loads is needed, countywide, to meet the green infrastructure implementation goals established by the MRP. Zero reduction in mercury loads was determined to be needed from MRP areas because baseline loads were predicted to be below the TMDL wasteload allocations for San Mateo County.

The analytical framework selected to support the San Mateo Countywide GI RAA is based on a linked system of models. These models provide a characterization of existing conditions and determination of necessary pollutant load reductions to meet requirements of TMDLs and the MRP as well as provide analysis of the amount of green infrastructure needed to provide the portion of the load reduction assigned to green infrastructure by the MRP. Implemented together, the models have the capacity to support efforts to identify cost-effective green infrastructure implementation scenarios that align with municipal goals.

c. Model Considerations to Inform GI Plans

An important consideration for the GI RAA was the ability to track costs and benefits of different categories of green infrastructure projects within the model. This tracking supports the selection of the most cost-effective implementation strategy to attain pollutant reduction goals, see Figure 3-1. The GI RAA builds upon the previous planning efforts and represents the following generalized green infrastructure project categories in the model:

1. **Existing Projects:** Stormwater treatment and green infrastructure projects that have been implemented since FY-2004/05. This primarily consists of all of the regulated projects that were mandated to treat runoff via Provision C.3 of the MRP, but also includes any public green street or other demonstration projects that were not subject to Provision C.3 requirements.

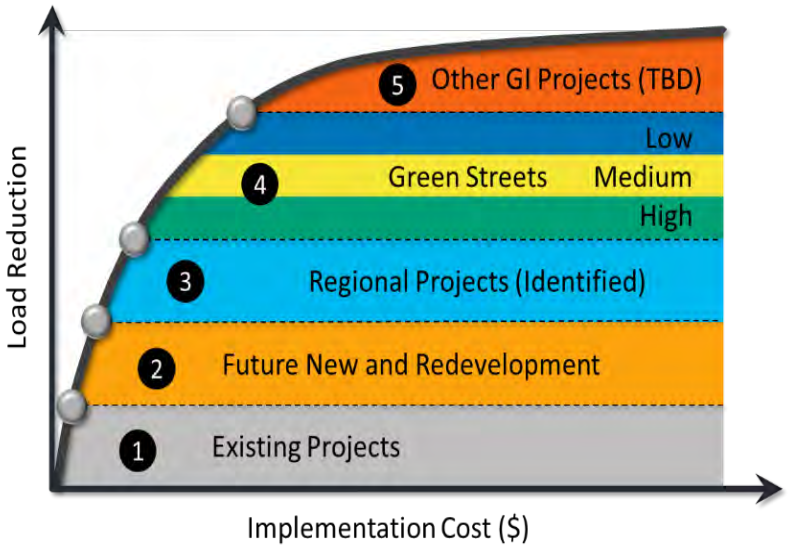

Figure 3-1. Example Implementation Recipe Showing General Sequencing of Green Infrastructure Projects.

2. **Future New and Redevelopment:** All the regulated projects that will be subject to Provision C.3 requirements to treat runoff via green infrastructure and LID and is based on projections of future new and redevelopment, see earlier discussion for more detail.

3. **Regional Projects (identified):** C/CAG worked with agencies to identify five projects within public parks, Caltrans property, and other entities willing to partner with permittees, including the Twin Pines project that is being pursued by the City of Belmont, to provide regional capture and infiltration/treatment of stormwater, and included conceptual designs to support further planning and designs. Note – the model can be updated to include future identified projects to support adaptive management.

4. **Green Streets:** The Stormwater Resource Plan (SRP) identified and prioritized opportunities throughout San Mateo County for retrofitting existing streets with green infrastructure in public rights-of-way. Green streets were ranked as high, medium, and low priority (within each subwatershed) based on a multiple-benefit prioritization process developed for the SRP. These opportunities were carried forward into the GI RAA analysis.

5. **Other GI Projects (to be determined):** Other types of green infrastructure projects on publicly owned parcels, representing a combination of either additional parcel-based GI or other Regional Projects which have not been identified to date. This may also include additional green infrastructure projects developed in relation to private development that is not required by C.3 requirements to implement green infrastructure, but that may be required to implement green infrastructure through local regulation.

The GI RAA considers the potential combinations of green infrastructure project opportunities that exist within each municipal jurisdiction, and selects a suite or "recipe" of projects that can most cost-effectively address pollutant load reductions. The amount and combination of those green infrastructure projects can be determined through analysis of estimated load reductions and implementation costs. Cost-benefit optimization of green infrastructure project opportunities was included to build upon the preliminary C/CAG SRP planning efforts above, and to inform and set meaningful goals for GI Plans. The model provides an estimate of the resulting pollutant load reduction and implementation costs.

d. Belmont Green Infrastructure Implementation Goals

The GI RAA considered multiple alternative scenarios that can inform implementation and the adaptive management process. Four modeling scenarios were configured for this analysis and are summarized in Table 3-1:

Load Reduction Objective	Percent of Total GI Cost to Achieve Reduction Objective		
	Jurisdictional	Countywide	*Total Savings (Jurisdictional vs. Countywide)*
Cohesive Sediment 17.6% Reduction	**Scenario 1**	**Scenario 2**	→ *Savings*
Total PCBs 17.6% Reduction	**Scenario 3**	**Scenario 4**	→ *Savings*
Total Savings (Sediment vs. PCBs)	↓ *Savings*	↓ *Savings*	↘ *Overall Savings*

Table 3-2. Model scenarios objectives and cost-benefit evaluation.

The following factors are considered for each model scenario:

Load Reduction Objective - With a cohesive sediment load reduction objective, Scenarios 1 and 2 represent the most conservative approaches. These assume that given the uncertainties about PCBs source areas, targeting an overall 17.6% load reduction of cohesive sediment in general (silts and clays) achieves the PCBs load reduction objective for GI. Scenarios 3 and 4 assume that PCBs sources are spatially distributed based on analysis of land use types. The cost-benefit optimization process targets those areas as having the highest likelihood of PCBs sources. Scenarios 3 and 4 highlight the potential cost savings (relative to Scenarios 1 and 2) that could be realized if PCBs sources are identified and targeted for green infrastructure implementation.

Jurisdictional verses Countywide - There are many possible ways to achieve a 17.6% load reduction for all of San Mateo County. The "Jurisdictional" approach, Scenario 1, stipulates that each jurisdiction is responsible to individually achieve at least a 17.6% load reduction based on the population-based wasteload reduction for each jurisdiction. Conversely, the "Countywide" approach, Scenario 2, achieves the 17.6% load reduction countywide by allowing the model to allocate the countywide wasteload reduction via green infrastructure across jurisdictional boundaries.

The Scenario 2 approach requires each municipality to agree to reduce overall PCBs within the county with the goal of creating a more cost-effective and efficient scenario by focusing on implementing green infrastructure in municipalities with higher yields of PCBs and soil conditions that are more amenable for infiltration. In general, the countywide approach can provide significant cost savings over the jurisdictional approach, based on the GI RAA modeling. Some agencies will have more green infrastructure opportunities, higher presence of PCBs, or better infiltrating soils and be able to do more, and some agencies will have fewer or more costly green infrastructure opportunities. A countywide approach also provides the opportunity to fund regional project opportunities, the costs of which could be shared by multiple jurisdictions. It may also provide a vehicle for credit trading between agencies. *Refer to the Green Infrastructure Funding Nexus Evaluation* [6] for more information about the concept of credit trading.

Following are different conceptual scenarios developed for Belmont to illustrate a range of possibilities in terms of jurisdictional (Scenario 1) or countywide (Scenario 2) approaches and projects for Belmont to achieve their pollutant reduction goal. The results of the GI RAA scenarios can inform the City's adaptive management process for green infrastructure implementation and help garner support for collaborative efforts for green infrastructure implementation or further research of PCBs source areas that could be more cost-effective implementation strategies over time.

Scenario 1: Belmont, Jurisdictional

Two sub-scenarios were developed as alternative implementation "recipes" of green infrastructure projects that could achieve the 17.6% reduction of modeled PCBs for the City. The first sub-scenario, 1.a, assumes the Twin Pines Park regional project is implemented. The second sub-scenario, 1.b, Illustrates a mix of green infrastructure implementation if the Twin Pines Park regional project is not built.

[6] SCI Consulting Group and Larry Walker Associates, January 2019.

Scenario 1a: Belmont, Jurisdictional with Regional Project

Table 3-2 includes the combination of green infrastructure projects that the Countywide GI RAA model identifies as the most cost-effective implementation scenario for the City if the Twin Pines Park regional project is implemented. The model indicates that the implementation of existing projects, future C.3 regulated new development and redevelopment projects, the Twin Pines Park regional project, green streets projects, and green infrastructure projects yet to be identified will exceed the minimum 17.6% pollutant reduction goal for Belmont.

In addition, the modeling does not account for green infrastructure projects at public schools located within Belmont or any future City policy of requiring new and redevelopment projects to implement green infrastructure to C.3 standards that are not currently required to do so. The inclusion of these additional green infrastructure projects into Belmont's green infrastructure constructed projects accounting will further increase the amount of green infrastructure within Belmont and further exceed their pollutant load reduction goals. The City will continue to identify, calculate, and track these different projects as part of their adaptive management process to determine what projects are needed to achieve their reduction goals.

Implementation Metrics		*Implementation Milestones*
		Final 2040
		Jurisdictional
Index	*% Load Reduction*	19.1%
	Volume Managed (acre-ft/yr)	145.2
	Treated Impervious (acres)	107.9
Capacities (acre-ft)	*Existing Projects*	0.7
	Future New & Redevelopment	2.1
	Regional Projects (Identified)	0.5
	Green Streets (High)	3.0
	Green Streets (Medium)	1.0
	Green Streets (Low)	0.5
	Other GI Projects (TBD)	0.3
	Total	**8.0**

Table 3-2. Scenario 1a: Green infrastructure implementation strategy for Belmont with regional projects

Scenario 1b: Belmont, Jurisdictional without Regional Project

If the Twin Pines Park regional project is not implemented, the Countywide GI RAA model indicates that, in addition to existing projects and future C.3 Regulated Projects associated with new development and redevelopment projects, the most cost-effective implementation strategy plan for the City is suggested to implement predominately green street projects with some other green infrastructure projects that have yet to be identified to meet the City's treatment goals. The chart developed by the Countywide Program shows that this scenario exceeds the minimum 17.6% pollutant reduction goal for Belmont. Refer to Appendix D for greater detail.

However, as mentioned previously, the modeling does not account for green infrastructure projects at public schools located within Belmont, non-regulated projects such as at City parks, or any future City policy of requiring new and redevelopment projects to implement green infrastructure to C.3 standards that are not currently required to do so. Accounting for these additional green infrastructure projects will reduce the amount of green infrastructure required to be implemented in green street and other to be determined projects to meet Belmont's pollutant load reduction goals.

The City will continue to identify, calculate, and track these different projects and other "no missed opportunities" as part of their adaptive management process to determine what projects are needed to achieve their reduction goals.

Scenario 2: Belmont, Countywide Approach

Table 3-3 illustrates a combination of green infrastructure projects that Belmont can implement to attain the target reduction if San Mateo County permittees joined into a Countywide scenario approach (Scenario 2) for green infrastructure treatment. This scenario accounts for the implementation of the five regional projects currently included with the GI RAA across San Mateo County. Table 3-5 also provides implementation milestones for Scenario 1.a as comparison for this scenario. The combination of existing green infrastructure projects, future C.3 regulated new and redevelopment projects, the Twin Pines Park project, the other four regional projects, and other more cost-effective projects in locations outside of Belmont, indicates that no additional green streets or other green infrastructure projects within Belmont would be needed within Belmont in order to achieve the Countywide pollutant reduction target.

Implementing the countywide scenario would require significant discussion among San Mateo County Permittees in order to gain consensus and provide cost-sharing agreements that could result in Belmont providing the reduced green infrastructure capacity indicated in this scenario.

Implementation Milestones for Impervious Area Treated

Table 3-3 represents Belmont's implementation strategies and goals for projected impervious areas treated, percent pollutant load reduction, and the volume of stormwater runoff managed as modeled for the countywide GI RAA. The City will continue to identify, calculate, and track these, and other, projects as part of their adaptive management process to determine what projects to implement in order to achieve their reduction goals. As noted earlier, the model indicates that the implementation of the following projects will exceed the minimum 17.6% pollutant reduction goal for Belmont.

Implementation Metrics		*Implementation Milestones*					
		Incremental		*Cumulative*		*Final 2040*	
		2020-2030	*2030-2040*	*2020*	*2030*	*Jurisdictional*	*Countywide*
Index	*% Load Reduction*	3.5%	12.8%	2.8%	6.3%	19.1%	4.1%
	Volume Managed (acre-ft/yr)	26.3	95.6	23.4	49.7	145.2	33.0
	Treated Impervious (acres)	10.1	84.6	13.1	23.3	107.9	26.6
Capacities (acre-ft)	*Existing Projects*	0.0	0.0	0.7	0.7	0.7	0.7
	Future New & Redevelopment	1.0	0.3	0.8	1.8	2.1	2.1
	Regional Projects (Identified)	--	--	--	--	0.5	0.5
	Green Streets (High)	--	1.4	--	1.6	3.0	--
	Green Streets (Medium)	--	1.0	--	0.1	1.0	--
	Green Streets (Low)	--	0.4	--	0.0	0.5	--
	Other GI Projects (TBD)	--	0.2	--	0.1	0.3	--
	Total	**1.0**	**3.3**	**1.5**	**4.3**	**8.0**	**3.2**

Table 3-3. Green infrastructure implementation milestones for Belmont, with comparison of Scenario 1.a, Belmont with Twin Pines Park regional project Scenario 2, Countywide.

e. Adaptive Management and Managed Metrics

It is likely that the actual implementation of green infrastructure projects will not follow the City prioritization and GI RAA output exactly; however, the Implementation Milestones tables, or "recipes" provide "management metrics" to guide the adaptive management process. Dimensions, capacity, and location of green infrastructure projects will vary based on on-the-ground feasibility and site-specific constraints.

The management metrics used for managing and tracking the implementation of green infrastructure includes the performance metrics for "% Load Reduction PCBs (Annual)," "Annual Volume Managed (acre-ft)," and "Impervious Area Treated (acres)." "Impervious Area Treated (acres)"is a metric suggested by the MRP for implementation tracking. The "% Load Reduction PCBs (Annual)" and "Annual Volume Managed (acre-ft)" are additional metrics based on annualized results represented in the GI RAA modeling system that are directly comparable to TMDL wasteload allocations. The "% Load Reduction PCBs (Annual)" provides a relative comparison of the load reduction to be achieved within each subwatershed. The "Annual Volume Managed (acre-ft)" shows the acre-feet of water captured and infiltrated and/or treated within each subwatershed. As a result of adaptive management, the implementation plan strategy may change over time and alternative green infrastructure projects can be substituted without having to re-run the GI RAA model, as long as the "Management Metrics for GI," representing the goals for the GI Plan, remain on track. While the various implementation strategies illustrate different ways that Belmont can implement green infrastructure, all scenarios meet the pollutant reduction goals of the MRP.

As part of the adaptive management process, Belmont will continue to look for opportunities to fund and implement green infrastructure projects to meet the final load reduction goals for 2040. The process will include the tracking of management metrics and continued re-evaluation of green infrastructure project opportunities considered for the GI RAA, including those identified and discussed in Chapter 2. For instance, the GI RAA assumed projected amounts of green infrastructure and LID associated with new and redevelopment projects, and which are subject to change based on factors that are outside the control of the City, such as levels of development and changing requirements of the MRP as it is updated. If less development occurs over time, more green streets or regional projects on public land may be needed to provide equivalent volume management. For the GI RAA and GI Plan, a preliminary schedule was developed to chart a potential course for green infrastructure implementation and considered the various project opportunities.

Given the relatively small scale of most green infrastructure projects, outside of the regional projects (e.g., LID on an individual parcel or green infrastructure in a single street block converted to green street), numerous individual green infrastructure projects will be needed to address the pollutant reduction goals. All the green infrastructure projects will require site investigations to assess feasibility and costs. As a result, the GI RAA provides a preliminary investigation of the amount of green infrastructure needed to achieve the countywide pollutant load reduction target. The GI RAA sets the GI Plan goals in terms of the amount of green infrastructure implementation over time to address pollutant load reductions. As GI Plans are implemented and more comprehensive municipal engineering analyses (e.g., masterplans, capital improvement plans) are performed, the adaptive management process will be key to ensuring that goals are met. In summary, the GI RAA informs green infrastructure implementation goals, but the pathway to meeting those goals is subject to adaptive management and can potentially change based on new information or engineering analyses performed over time.

The following provides a priority list of actions for the City to undertake for implementing the GI Plan:

1. Implement "short list" priority green infrastructure projects identified in Chapter 2, and continue to look for other opportunities to implement green infrastructure in public and private projects.
2. Continue to monitor and pursue funding opportunities for green streets, other public, and joint public and private green infrastructure implementation.
3. Track green infrastructure projects management metrics and implement adaptive management strategies to ensure the City's pollutant reduction goals are met.
4. Continue to evaluate and participate in on-going jurisdictional discussions about a countywide approach.
5. Continue discussions and potential implementation of new City policies and standards to increase the amount of green infrastructure developed through private new and redevelopment.
6. Assess and make modifications to the GI Plan and other City documents and procedures to reflect lessons learned.

4.0 Green Infrastructure Project Tracking and Mapping

This section describes the process for tracking and mapping completed public and private green infrastructure projects and making the information available to the public, as required by MRP Provision C.3.j.i.(2)(d). This process was developed by C/CAG to comply with Provision C.3.j.iv.(1) that states "Permittees shall, individually or collectively, develop and implement regionally-consistent methods to track and report implementation of green infrastructure measures including treated area and connected and disconnected impervious area on both public and private parcels within their jurisdictions."

a. Countywide Program Tracking and Mapping Tool

This section describes the process for tracking and mapping completed public and private green infrastructure projects and making the information available to the public, as required by MRP Provision C.3.j.i.(2)(d). This process was developed by C/CAG to comply with Provision C.3.j.iv.(1) that states "Permittees shall, individually or collectively, develop and implement regionally-consistent methods to track and report implementation of green infrastructure measures including treated area and connected and disconnected impervious area on both public and private parcels within their jurisdictions" and a "process for tracking and mapping completed projects, public and private, and making the information publicly available".

C/CAG, as part of its San Mateo Countywide Sustainable Streets Master Plan (SSMP), is developing a web-based Implementation Mapping and Tracking Tool (GI Tracking Tool) as part of its Sustainable Street and Green Infrastructure Project. The GI Tracking Tool will support C/CAG member agencies in the tracking of green infrastructure as required by the MRP and sustainable streets implementation and provide a "dashboard" to demonstrate to the public and stakeholders the benefits of green infrastructure in terms of adaptation to climate change impacts and water quality improvement. The GI Tracking Tool will track and map green infrastructure projects implemented by the C/CAG member agencies, quantify key metrics related to their performance, and compare those metrics to goals established by the GI Plan. The GI Tracking Tool will be delivered in two phases, with Phase 1 being completed in 2019 and Phase 2 being completed mid-2020.

In addition, the dynamic mapping and visualization of the GI Tracking Tool can potentially support a variety of efforts by C/CAG member agencies, including public outreach, discussions with public officials, and engagement of potential funding partners and other interested stakeholders to continue to build support for green infrastructure implementation. The GI Tracking Tool is being designed in a modular, flexible framework such that other programs could be integrated over time (e.g., sustainable streets, flood resiliency).

The GI Tracking Tool will be composed of the following elements. Over time, the GI Tracking Tool could be expanded to include additional functions to address other issues and programs (e.g., climate change, urban space improvements, etc.). Key elements of the GI Tracking Tool include:

- 2D and 3D mapping of green infrastructure project locations and related base maps (watershed boundaries, waterbodies, city boundaries, storm drains, etc.).
- Tracking of project-specific data (project type, construction date, underlying soils, etc.) or other project-specific benefits for stormwater management (e.g., trash capture) provided by each C/CAG member agency.
- Visualization of citywide and countywide metrics including number of projects planned and constructed, length of right-of-way being managed by green infrastructure, and performance metrics such as impervious area treated, stormwater runoff volumes captured and/or treated (collectively referred to as stormwater volumes "managed"), climate change mitigation and progress toward long-term goals.
- Messaging that provides clear linkage to the SSMP.

The GI Tracking Tool will track project types and locations and quantify performance metrics on a project- and city/Countywide-basis. This includes:

- The locations of projects shown on a dynamic map along with key base layers (watershed boundaries, waterbodies, city boundaries, storm drains, etc.)
- The user can click on any project and view more information regarding that project including its type (green infrastructure and LID on a parcel, green street, regional facility, etc.) and other fields that are desired to be tracked by the C/CAG member agencies.
- The user may also query the GI Tracking Tool to find projects based on keywords (as opposed to clicking through the map)

The GI Tracking Tool will also allow for quantification of performance metrics and tracking of progress toward key implementation goals, including:

- Estimate total area and impervious area treated with green infrastructure: for each project, the user will provide information on capture area or the system will use 'default' values.
- Stormwater volumes managed during the annual average year: allow estimate of stormwater runoff volumes managed with green infrastructure using methods consistent with the RAA/GI Plans. The stormwater volume metrics will also be useful to the SRP (which encourages tracking of stormwater volume capture) and for engaging those users interested in broader water resources programs such as water supply.
- Progress toward implementation goals: will provide a user-editable database of compliance/implementation goals from the SSMP and GI Plans (and/or other programs), and visualize the progress toward those goals.
- Climate change mitigation: based on climate change modeling conducted under the SSMP, metrics will link green infrastructure to climate change adaptation and mitigation.

The GI Tracking Tool will allow additional metrics to be added over time. For example, in future phases the tool could track metrics related to flood control such as peak flow reduction. The GI Tracking Tool could also quantify triple bottom line benefits that would highlight the multiple additional benefits provided to promote investment in projects, such as carbon sequestration, public health benefits, heat island reduction, and water supply augmentation.

The GI Tracking Tool will also permit for reporting outputs, including in Word, Excel, or PDF, tables that summarize the project inventory and performance metrics for use in reports. Each C/CAG member agency is responsible for uploading their own data for projects in their jurisdiction. The Excel template includes required fields such as location, project type, and sizing information, along with optional fields desired to be tracked by the C/CAG member agencies.

b. City Project Tracking Process

Tracking Tools and Procedures

Belmont uses a variety of tools to track the planning and implementation of pervious area, stormwater detention, green infrastructure, and C.3 regulated projects. This tracking can also help the City determine needs for funding, or which projects to propose for funding as opportunities arise. These tools include:

Project plan review – New and remodel/redevelopment projects are required to address a range of City required regulations as well as submit for a variety of permits, etc. for review and approval by a range of City multidisciplinary staff. In addition, the Park and Recreation department reviews bicycle and pedestrian projects and other related rights of way projects. This review can consider the ability to integrate green infrastructure or green streets projects.

Captial projects – The City identifies near-term capital improvement projects under their Capital Improvement Program. City staff participation in, and review and coordination of these projects will allow the consideration and integration of green infrastructure into them. As these and longer-term capital improvement projects are identified, planned, designed, and constructed, City staff monitor and track the progress of the projects and their contribution to reducing pollutant loads

Project approvals – Once project submittals contain all of the necessary information and requirements and are found to be in compliance with regulations, conditions of approval and other requirements may be placed on the project along with the project approvals.

Construction observations, inspections and enforcement actions – Belmont performs construction observations and inspections to ensure green infrastructure, low impact development, and other project elements are installed and maintained as required and requires corrective actions when a project is found defective.

Coordination with quasi-public, other public agencies, and private development –Numerous potential new and redevelopment projects are in the planning stages, or have the potential in the future. The City will continue to monitor and coordinate with these projects.

Coordination with the Twin Pines Park Regional Project – The City will continue to work and coordinate in the planning, design, construction, and funding of this project.

Prioritized green infrastructure project opportunities maps and lists – Belmont will continue to monitor and search for green infrastructure opportunities within the City, including the ability to partner with other public and private projects to provide or expand green infrastructure.

Internal accounting – City staff maintains an internal accounting of site design measures, green infrastructure provision including Regulated Projects, and provides such information within their stormwater Annual Report.

Operations and maintenance – For public projects, including those with green infrastructure, the parks department is responsible for the operations and maintenance of civic facilities, parks, and public parking lots, and the public works department is responsible for maintaining the majority of the rights of way. The Parks and Recreation Department does not currently have green infrastructure maintenance guidelines in place. Staff intends to implement a maintenance checklist for green infrastructure projects in parks and City facilities by December 2019. Most of the private development projects will have operations and maintenance performed by the owner/developer.

The City will upload completed green infrastructure project information into the Countywide Program's Tracking Tool to keep the San Mateo County's completed green infrastructure project accounting up to date, as well as to monitor the provision of regional projects and green infrastructure projects and their resulting acre-feet volume water managed and impervious area reduced to assess and understand if the City and the county is on track to meet its 2020, 2030, and 2040 load reduction goals. This tracking will assist the City in understanding if a shortfall of green infrastructure provision may be forthcoming, which may occur if C.3 regulated projects do not happen at the estimated rate of development. This will allow the City time to take action to select, plan and design, obtain funding, and install public or joint partnership green infrastructure projects within the schedule goals to achieve the City's load reduction requirements by 2040. Finally, tracking of maintenance observations and records can help inform the City of procedures, scheduling, and funding that may need to be refined to address any problematic issues.

As discussed in greater detail in Chapter 3, monitoring and adaptive management techniques Belmont can undertake is to include into their routine practices the tracking of planned and potential green infrastructure opportunity projects through all phases of implementation and their timeline; assess the progress towards the achieving their goals; determine the potential need for additional new City or other public and private green infrastructure provision projects including the amount, potential locations, and funding needs, etc. if projected new and redevelopment projects are delayed; incorporate the priority project maps and lists produced as part

of this GI Plan into the City's long-term planning and capital improvement project planning; make modifications to the plan to take advantage of lessons learned; and following if a countywide approach scenario to providing green infrastructure is implemented over individual jurisdiction provision of green infrastructure.

c. Public Access to Information

As required by the MRP, the process for tracking and mapping completed public and private projects includes making the information publicly available. The public will have access to this and other information related to the City's GI Plan through:

- The Green Infrastructure Plan will be posted on the City's website, at https://www.belmont.gov/departments/public-works/infrastructure/green-infrastructure.
- The City's Storm Drain System web page, found at www.belmont.gov/departments/public-works/infrastructure/storm-drain-system and www.belmont.gov/departments/public-works/environmental/water-pollution-prevention.
- The Countywide Program has developed a Stormwater Resource Plan (SRP) on behalf of the City and other C/CAG member agencies to inform the development of this GI Plan. The SRP is available on the Flows to Bay website, found here: www.ccag.ca.gov/srp. This website includes a viewable version of countywide analysis and green infrastructure project identification and prioritization of regional projects, green streets, and parcels, as well as the main report and appendices.
- The Countywide Program is finalizing phase the Reasonable Assurance Analysis document. Upon its completion, it will be available on the Flows to Bay website.
- C/CAG is having a Sustainable Streets Master Plan developed that will assess and more clearly define green and complete street opportunities in the county. A web-friendly interface will also be developed as part of C/CAG's Sustainable Streets Master Plan to allow countywide permittees to upload information about completed green infrastructure projects and permit the public access to this information. The GI Tracking Tool presented in the previous section is expected to serve as a user-friendly, intuitive, and dynamic mechanism for the public to interact with the GI planning process. The public will have the opportunity to use a web-mapping interface to see where GI projects have been implemented, where near term GI implementation in planned, and where planned projects have been identified.

5.0 Green Infrastructure Integration with Other Planning Documents and Legal Mechanisms

a. Approach

As required under C.3.j.i.2.h of the MRP's requisites for Green Infrastructure Plans, the City of Belmont evaluated their existing planning, engineering, and other plans, policies, ordinances, resolutions, and similar documents to determine which should be further reviewed and updated or modified to incorporate green infrastructure requirements, reference the City's Green Infrastructure Plan, and other changes to support the implementation of green infrastructure in Belmont. A range of documents were assessed including those related to land use, urban foresting, transportation, infrastructure, health and safety, open space, flooding and drainage, development regulations, and standard details and specifications. Provision C.3.j.i.2.h of the MRP also expects that these modifications will be completed as a part of completing the Green Infrastructure Plan, and by not later than the end of the permit term, December 31, 2020.

b. Modifications to Existing Documents

The following table, Table 5-1, lists City documents that were collected and evaluated, identifies the documents determined to need modification in regard to the implementation of green infrastructure, and the expected timing for revision and adoption of the planning document modifications. Documents determined to be technical in nature or not relevant to green infrastructure policy and implementation have been designated as Not Appropriate (N/A) for modification.

In addition, a new planning document, the Twin Pines Park Master Plan, was being prepared during the review of the City's existing planning documents. Review of this master plan found no references to green infrastructure or to stormwater management and treatment. This determination led to references being added into the final master plan for the City to seek opportunities to implement green infrastructure into future conceptual and final designs of the park prior to its adoption.

Selected City documents have been reviewed and text additions or edits provided so that the documents can be updated or modified to incorporate or expand upon references to and add definitions, policies, opportunities, requirements, descriptions, and other discussions related to the Belmont's Green Infrastructure Plan, as well as water quality, green infrastructure, low impact development, community character, and other related benefits and issues connected to the mandates of the GI Plan. Documents noted in Table 5-1 to be modified and updated or adopted have been reviewed by staff from various City departments and their comments considered and integrated.

Table 5-1. Identification, Evaluation, and Modification of City Planning Documents

Document	Incorporates GI Requirements	Expected Update Schedule
Basic Development Standards – Single Family Residential	N/A	N/A
Belmont Village Specific Plan	Yes, limited	Amendment and adoption by December 31, 2020
Climate Action Plan	No	Amendment and adoption by December 31, 2020
Comprehensive Pedestrian Bicycle Plan, 2016	No	Amendment and adoption by December 31, 2020
Downtown Specific Plan	N/A	Document became Belmont Village Specific Plan. See Belmont Village Specific Plan.
Four Corners Traffic Study Report, 2016	No	Later, at next scheduled update or as project moves forward in implementation and future phases. (date TBD) Green infrastructure opportunities, measures, and strategies will be considered and integrated as feasible.
General Plan 2035	No	Later, at next regularly scheduled update. (date TBD)
Municipal City Code	No	Amendment and adoption by December 31, 2020
Parks, Recreation, and Open Space Master Plan	No	Later, at next scheduled update. (date TBD) Green infrastructure opportunities, measures, and strategies will be considered and integrated into this Plan when it is updated. Green infrastructure can be integrated into streets, development sites, parking lots, parks, open space, and other locations to aid in stormwater management and water quality treatment.
Preferred Tree Species	No	Amendment and adoption by December 31, 2020
Ralston Ave CIP Report, 2017	No	Later, at next scheduled update or as project moves forward in implementation and future phases. (date TBD) Green infrastructure opportunities, measures, and strategies will be considered and integrated as feasible.
Ralston Ave Corridor Study and Improvement Plan	No	Later, as projects move forward in implementation and future phases. Initial considerations have been developed for the integration of green infrastructure opportunities, measures, and strategies into streets and other locations. (date TBD)

Residential Design Criteria	N/A	N/A
Residential Design Guidelines	N/A	N/A
Sanitary Sewer Rehabilitation Plan	N/A	N/A
San Juan Hills Area Plan	No	Later, at next scheduled update. (date TBD) Green infrastructure opportunities, measures, and strategies will be considered and integrated when it is updated. Green infrastructure can be integrated into streets, development sites, parking lots, parks, open space, and other locations to aid in stormwater management and water quality treatment.
Standard Details	No	Amendment and adoption by December 31, 2020
Storm Drain Master Plan Final Study	No	Later, at next regularly scheduled update. (date TBD) Initial considerations have been developed for the integration of green infrastructure opportunities, measures, and strategies into streets and other locations. The Storm Drain Master Plan can be updated to reflect the use of green infrastructure measures and strategies as part of the storm drain system in accordance with the City's GI Plan, including locations identified as opportunities for green street and other green infrastructure measures.
Subdivision Ordinance	No	Amendment and adoption by December 31, 2020
Tree Permit Review	N/A	N/A
Twin Pines Park Master Plan	Yes	Adopted by City Council on February 26, 2019. More detailed green infrastructure opportunities and design to be integrated with future improvement plans.
Water Efficient Landscape Ordinance	No	City tiers off Ordinance from their water provider, Mid-Peninsula Water District.
Western Hills Area Plan	No	Later, at next scheduled update (date TBD). Green infrastructure opportunities, measures, and strategies will be considered and integrated into this Plan as feasible when it is updated, including locations identified as opportunities. Green infrastructure can be integrated into streets, development sites, parking lots, parks, open space, and other locations to aid in stormwater management and water quality treatment.
(Citywide) Vision Statement	N/A	N/A

c. New Policies, Regulations, and Other Implementation Mechanisms

As an outcome of the review of existing policy documents, development standards, etc.; and the identification of GI opportunities throughout the City, it was determined that several new regulations should be prepared for adopted, these are addressed below. In addition, it was determined that the City should pursue an additional method for achieving its stormwater treatment goals which is not currently credited through the MRP; this is discussed below as well.

Private development provision of "No missed opportunities" green infrastructure

The City has been investigating opportunities and options to require private property owners to implement green infrastructure facilities as per MRP Provision C.3j.ii. This will help the City meet the load reduction goals outlined in this GI Plan. The City will continue to evaluate these options and will develop and adopt policy and regulations to require the selected implementation strategies following adoption of this GI Plan. If approved, these policies would require certain development projects that are not required by the current MRP to provide green infrastructure designed to meet the treatment levels defined for C.3 new and redevelopment projects.

The City may periodically reconsider these and other opportunities for private property green infrastructure provision to address potential issues as the GI Plan is implemented. Following are some of the opportunities being considered:

- Require the installation and maintenance of green infrastructure and other street improvements in rights of way adjacent to private development projects. Such improvements could treat stormwater runoff from both public streets and private development.
- Require C.3 regulated projects to improve and provide green infrastructure along their project frontages. Such improvements could treat stormwater runoff from both public streets and private development.
- Require projects types not currently governed by the MRP to provide GI meeting C.3 requirements. This can include non-residential projects, multi-family projects, and certain single family residential homes and projects.
- Reduce the size threshold required for providing green stormwater treatment. Require projects that are too small to be governed by the MRP to provide GI meeting C.3 requirements.
- For projects that fall under a Special Projects classification, require the project to improve and provide green infrastructure along their project frontages. Such improvements could treat stormwater runoff from both public streets and private development.
- Require all new and redeveloped sites to install on-site LID, including green infrastructure measures.
- The City can provide incentives for projects to install green infrastructure measures beyond the minimum requirements. This can include expedited permitting, reduced permit fees, etc.

Other potential policies, regulations, and other implementation mechanisms

Belmont is exploring techniques and strategies to increase green infrastructure implementation and aid in the reduction of TMDL loads, especially given challenges the City has experienced in implementing green infrastructure due to steeper terrain and having limited funding for design, construction, and maintenance for green infrastructure.

The City can also consider other opportunities to address meeting the identified load reduction goals, including:

- Evaluate the benefits, pros and cons, and potentially advocate for a countywide approach to achieving countywide TMDL reductions rather than the current approach of each individual jurisdiction

providing and maintaining green infrastructure within their own jurisdiction to achieve their proportion of the countywide TDML reduction.

- Continue to look for opportunities to partner with other public and private institutional facilities to add or expand green infrastructure facilities as well as treat shared public and private runoff.

If these and/or other new issues and strategies are determined to be implemented, existing planning documents and legal mechanisms may be updated or completely new documents and mechanisms may need to be prepared or obtained, including plans, MOUs and other agreements, funding, and operations and maintenance provision.

d. Work Plan for Inclusion of Green Infrastructure in Future Updates or New Documents

A few of the City's planning, engineering, and other documents have been identified to be updated and/or approved after adoption of the Green Infrastructure Plan. This timing is due to the documents being updated as part of the City's normal cycle of plan updates or are currently under development.

Per section C.3.j.i.2.i of the MRP's requirements for Green Infrastructure Plans, a Workplan for updating and modifying these existing documents and preparing new documents must be developed. Belmont's Workplan to include references to the City's Green Infrastructure Plan and other policy, requirements, and guidance to identify and implement green infrastructure is included below. As mandated by the MRP, the Workplan is to identify how the City will ensure that green infrastructure and low impact development measures are appropriately considered, coordinated, and included in future plans.

City staff, officials, stakeholders, and the selected consultants responsible for developing new or updating existing documents will coordinate and actively monitor, consider and incorporate goals, policies, guidance, requirements, and other discussions related to green infrastructure, low impact development, stormwater management, and improving water quality as mandated by the MRP and required by the Green Infrastructure Plan as appropriate to the document. New policies, regulations, and other planning documents and legal mechanisms will be developed to implement green infrastructure, including the potential strategies noted above. One such new document already identified will be a green infrastructure maintenance checklist for projects in City parks and facilities that is intended to be implemented by December 2019. Belmont will work with partner agencies in the drafting and adoption of documents related to joint projects or a countywide approach. In addition, secondary community benefits such as enhancing City character and improving roadway safety, building upon earlier green infrastructure policy and plans, evaluating prior projects and programs, consistency between plans and documents, and so forth will be considered for inclusion. Interdepartmental City staff have and will continue to work together to identify, discuss, and implement green infrastructure requirements on projects and planning documents.

Green infrastructure opportunities, prioritization, and strategies will be considered and integrated into these plans when they're updated or developed, where feasible and in accordance with the City's adopted Green Infrastructure Plan and future amendments, including locations identified as opportunities for green street and other green infrastructure measures and facilities.

6.0 Green Infrastructure Guidance

a. Green Infrastructure Design Guide – guidelines, typical details, and standards

SMCWPPP, with input and feedback from its member agencies, including Belmont, has developed a countywide Green Infrastructure Design Guide (Design Guide) and its appendices to provide comprehensive guidance on the planning, design, construction, and operations and maintenance of green infrastructure for buildings, parking lots, sites, and streets. The Design Guide addresses the requirements of the MRP, fulfilling Section C.3.j.i.(2)(e) requiring design and construction guidelines for streets and projects and C.3.j.i.(2)(f) for developing typical design details and specifications for different street and project types. The Design Guide also addresses the part of C.3.j.i.(2)(g) related to a regional approach for alternative hydraulic sizing for non-regulated constrained street projects.

The Design Guide includes a range of information related to green infrastructure, such as provision of policies and definitions; identification of different types of treatment and site design measures; summation of various benefits including a range of community benefits provided beyond stormwater management; presentation of before and after images of integrating green infrastructure into projects; introduction of complete streets concepts and design; discussion regarding BASMAA's regional approach for alternative sizing for non-regulated constrained green street projects; design and implementation considerations; operations and maintenance; and provision of typical construction details and specifications. The Design Guide explains how these concepts, considerations, and guidance can be used to effectively integrate green infrastructure into communities in new and redevelopment projects whether they are C.3 regulated or not.

General guidelines for overall streetscape and project design, construction, and maintenance have been developed so that projects have a unified, complete design and implement the range of functions associated with the projects. The MRP emphasizes the need for guidance related to green streets functions. The Design Guide includes implementation guidance specifically for stormwater management and treatment within streets. The guidance supports safe and effective multimodal travel with a focus on the comfort of people walking and cycling; shared use as public space and an attractive and functional public realm; use of appropriate measures for different street and land use contexts and types; and the achievement of urban forestry goals and benefits. The Design Guide defines practices to give considerations to no missed opportunities and the efficient and effective coordination, review, and implementation of green infrastructure in public and private projects.

The Appendices of the Design Guide include typical design details and specifications for the design and construction of green infrastructure applicable to a variety of applications whether street or site-based projects.

Belmont will incorporate and use the Design Guide and future amended versions to provide support and guidance in implementing green infrastructure within the City. As more green infrastructure projects are implemented in Belmont, portions of the Design Guide may be modified, supplemented, and/or superseded by Belmont -specific updates or modifications based upon lessons learned and other factors experienced in or determined by the City. The Design Guide can be found at the Countywide Program's website, at https://www.flowstobay.org/gidesignguide.

b. SMCWPPP C.3 Regulated Projects Guide

The C.3 Regulated Projects Guide, previously named the C.3 Technical Guide, has been updated. It is available to provide guidance related to more technical aspects of green infrastructure for regulated and other projects.

7.0 Green Infrastructure Hydraulic Sizing

MRP Provision C.3 requires Phase I stormwater Permittees like the City of Belmont to use the municipal planning process to address pollutant discharges in stormwater runoff by requiring the implementation of control measures that infiltrate, biotreat, or capture and use stormwater during new development and redevelopment. The MRP outlines numeric and hydromodification management criteria for Regulated Projects[7] and allows for the use of an alternative sizing methodology for constrained non-regulated green streets projects with green infrastructure typically implemented in rights of way.

a. Regulated Projects

Numeric Sizing Criteria

MRP Provision C.3.d outlines volume and flow-based numeric sizing criteria for stormwater treatment measures implemented on Regulated Projects. Two options are presented for the volume hydraulic design criteria in Provision C.3.d.i.(1), specifically capturing the volume for the 85th percentile, 24-hour storm or capturing 80% or more of annual runoff generated at the site. Flow hydraulic design criteria presented in Provision C.3.d.i.(2) include treating 10% of the 50-year peak flow rate, the runoff produced by a storm two times the depth of the 85th percentile, 24-hour storm, or runoff resulting from a rain event equal to an intensity of 0.2 inches per hour. An extensive catalog of technical guidance documentation and resources supporting the sizing of C.3 projects is available on the Countywide Program's Flows to Bay website[8] including worksheets for both volume and flow-based sizing of green infrastructure in a manner consistent with the requirements outlined in MRP section C.3.d.

Hydromodification Management Sizing Criteria

Regulated Projects that create and/or replace one or more acre of impervious surface are also considered Hydromodification Management Projects and are required to meet the Hydromodification Management (HM) Standard of Provision C.3.g.ii unless projects meet one or more of the criteria for exclusion presented in C.3.g.i. These criteria include conditions where post project impervious is less than or equal to pre-project impervious, the project is located in a catchment that drains to a hardened or engineered channel, or the project is located in a subwatershed that is highly developed with 65% or more imperviousness. The Hydromodification Applicability Map of San Mateo County was developed on behalf of Permittees during the previous permit term, presented in Attachment C of the MRP and as Figure 7.1 here, and indicates that portions of Belmont drain to a hardened channel along Belmont Creek, are located in highly impervious areas, or are in low gradient areas. These areas are therefore exempt from the HM requirements outlined in C.3.g. The portion of Belmont shown in green is subject to hydromodification management requirements outlined in the MRP Provision C.3.g. The Countywide Program has developed a Hydromodification Management Measure resource, presented as Section 7 of the C.3. Regulated Projects Guide, to support efforts to demonstrate that post-project runoff volumes and duration do not exceed pre-project conditions.

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[7] Regulated Projects are typically. associated with new development or redevelopment on parcels or portions of parcels to meet the definition outlined in the MRP (e.g.; creating or replacing greater than or equal to 5,000 square feet of impervious area). A comprehensive definition of Regulated Projects can be found in Provision C.3.b of the MRP.

[8] C.3 Regulated Projects Guide documentation can be found on the Countywide Program's Flows to Bay website at https://www.flowstobay.org/newdevelopment#c3TechGuidance.

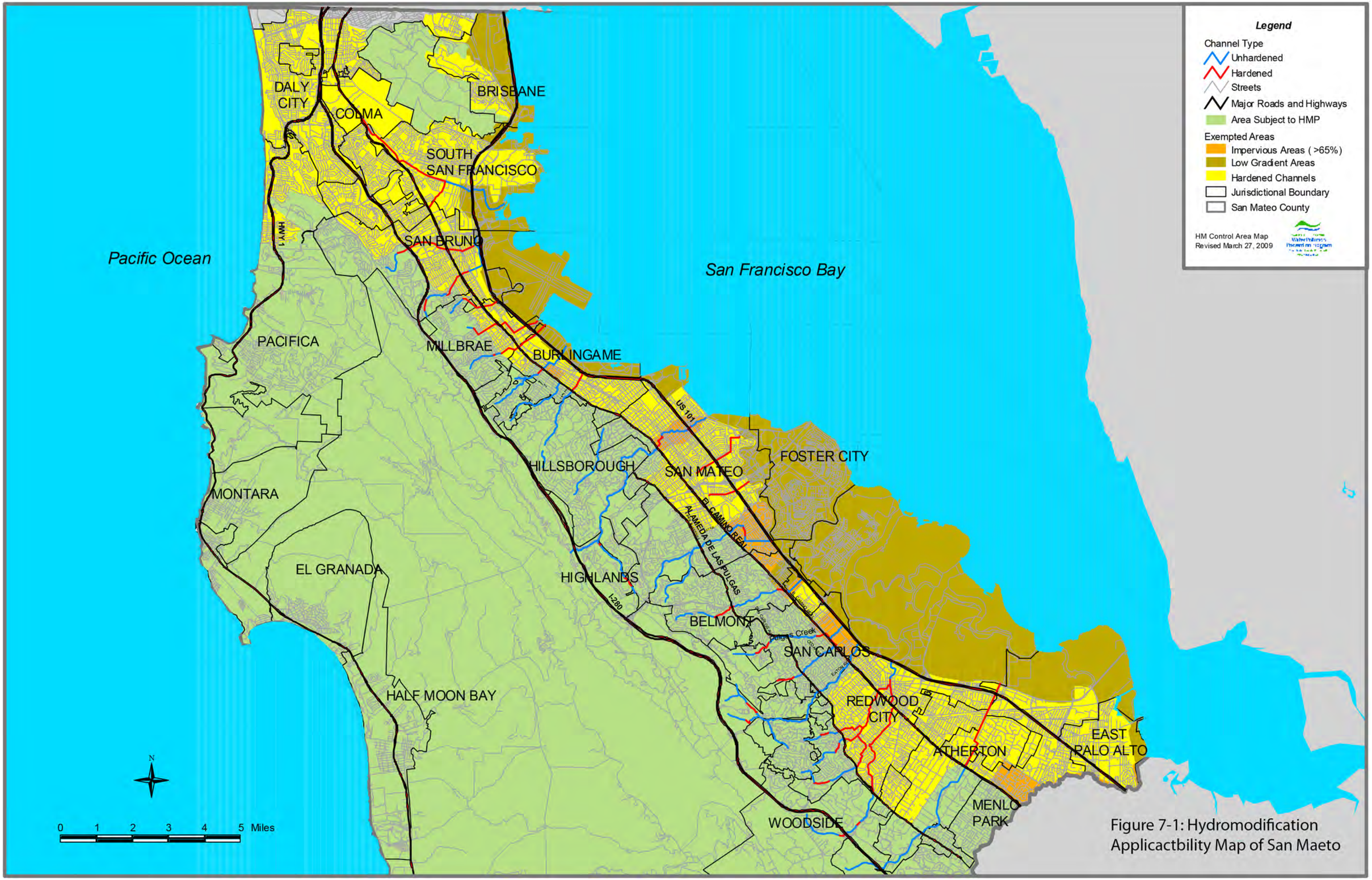

Figure 7-1: Hydromodification Applicactbility Map of San Maeto

b. Non-Regulated Constrained Green Streets Projects

The MRP recognizes that green street green infrastructure implemented in the public right of way may be constrained by available space, the presence of utilities, or other factors and allows non-regulated green streets project with clearly defined and documented constraints to use an alternative sizing methodology. The Bay Area Stormwater Management Agencies Association (BASMAA) has developed a regional green streets alternative sizing guidance[9] (green streets sizing guidance) based on an extensive hydrologic and hydraulic modeling analyses. This green streets sizing guidance presents sizing curves outlining the minimum bioretention surface area required to treat 80% of average annual runoff to meet the second volumetric hydraulic design criteria presented in MRP Provision C.3.d.i.(1). The guidance also outlines approaches to green infrastructure design for projects where C.3.d sizing requirements cannot be reasonably achieved and presents an equation to calculate the minimum bioretention sizing factor, the ratio of the surface area or footprint of the bioretention facility and the impervious area treated by green infrastructure, to meet requirements outlined in C.3.d based on the mean annual precipitation (MAP) of the project site. The sizing factor equation presented is:

$$Sizing\ Factor = 0.00060 \times MAP + 0.0086$$

A review of annual rainfall records for the closest available long-term rainfall gauge, NOAA gauge number 046646 in Palo Alto, indicates that Belmont receives a MAP of 15.41[10] inches per year translating into an alternate green infrastructure sizing factor of 0.019. Non-regulated green streets projects implemented within the Belmont can therefore be designed to ensure that 1.9% of a green streets drainage area is bioretention and achieve the alternative sizing requirements consistent with MRP Provision C.3.d.i.(1). Additional information regarding the alternative sizing methodology can be found in the *Guidance for Sizing Green Infrastructure Facilities in Street Projects (*which includes the companion analysis document *Green Infrastructure Facility Sizing for Non-Regulated Streets Projects)* presented in Appendix 7 of the Green Infrastructure Design Guide.

[9] BASMAA, 2018. "Guidance for Sizing Green Infrastructure Facilities in Street Projects."

[10] Climate summaries for northern California available online at https://w2.weather.gov/climate/local_data.php?wfo=STO

c. Hydraulic Sizing Resources

An overview of relevant guidance documents and resources for Regulated Projects and green streets projects for areas exempt from hydromodification management requirements and areas subject to those requirements is presented in Table 7-1.

Table 7-1. Location of hydraulic sizing and other applicable guidance for different project types.

Project Type	Guidance Source Location	
	Provision C.3.i or HM Guidance, if Applicable	Hydraulic Sizing Guidance
Regulated Project that **is not** a Hydromodification Management Project	Not applicable	SMCWPPP C.3 Regulated Projects Guide, Section 5.1, Hydraulic Sizing Criteria
Regulated Project that **is** a Hydromodification Management Project	SMCWPPP C.3 Regulated Projects Guide, Section 7, Hydromodification Management Measures	SMCWPPP C.3 Regulated Projects Guide, Section 7, Hydromodification Management Measures
Non-Regulated Green Infrastructure Project (public or private project) **not subject** to Provision C.3.i	Not applicable	BASMAA Guidance for Sizing Green Infrastructure Facilities in Streets Projects with companion analysis: Green Infrastructure Facility Sizing for Non-Regulated Streets Projects (can also be found in: Green Infrastructure Design Guide, Section 4.12 Sizing of Green Infrastructure Facilities and Appendix 7 Guidance for Sizing Green Infrastructure in Streets)
Non-Regulated Green Infrastructure Project (public or private project) **subject** to Provision C.3.i	SMCWPPP C.3 Regulated Projects Guide, Appendix L – Site Design Requirements for Small Projects	

8.0 Evaluation of Funding Opportunities

a. Overview of Current and Potential Funding Opportunities

The Countywide Program commissioned the Green Infrastructure Funding Nexus Evaluation11 to aid member agencies in an efficient, comprehensive, and cohesive countywide identification, evaluation, and selection of potential funding sources for the implementation of public green infrastructure that would be most useful to each member agency. MRP provision C.3.j.i(2)(k) requires a GI Plan to include "an evaluation of prioritized project funding opportunities, including, but not limited to: Alternative Compliance funds; grant monies, including transportation project grants from federal, State, and local agencies; existing Permittee resources; new tax or other levies; and other sources of funds."

The Green Infrastructure Funding Nexus Evaluation report looked into common existing funding mechanisms (fees, taxes, developer fees, etc.) as well as recently pioneered funding strategies such as alternative compliance funds and enhanced infrastructure finance districts. Many municipalities are finding that obtaining funding for green infrastructure can be challenging and that no single source of revenue is adequate to fund its stormwater and GI needs. Hence, most agencies will need to develop a strategy to obtain funding from several sources – a portfolio approach – to successfully achieve the needed funding. The current and ongoing process the City is undertaking of reviewing the funding sources that are, or could be, available and will culminate in a tool box of the GI funding opportunities that are most beneficial and feasible for Belmont.

Belmont has reviewed the Green Infrastructure Funding Nexus Evaluation report and evaluated its findings for potential GI funding sources and strategies to supplement the funding sources currently being used or intended to be used by Belmont. This evaluation has identified a variety of sources and strategies that can be used or explored more thoroughly following the approval of the GI Plan as Belmont moves forward with planning, design, construction, and operations and maintenance of green infrastructure. The identification of potential funding sources is a requirement of Provision C.3.j.i.(2) of the MRP. Belmont intends to periodically review their evaluation and identification, exploration, and use of funding sources to inform their approach to streamlining, selecting, and obtaining funds for the implementation and O&M of GI.

Current funding is insufficient for the capital and maintenance needs of existing stormwater infrastructure. Obtaining additional funds to implement and maintain new GI facilities within the existing system will be difficult. Belmont will need additional funds to implement all phases of green infrastructure, including staff, planning, design, construction, and operations and maintenance. It is expected that multiple sources of funding will need to be obtained to achieve the City's goals in providing and maintaining GI. As possible, Belmont intends to partner with other agencies and private property owners to lessen the City's direct financial burden. This can include the planning, design, and construction of projects as well as operations and maintenance for shared projects with partners, projects that provide co-benefit to other entities, and private or public projects by others.

In addition, Belmont will review other projects to determine if GI implementation and funding can be integrated into other transportation, utility, and other improvement projects that already have funding or have access to other funding streams. These and other potential GI funding sources will be monitored by the City and the Potential Funding Opportunities table will be assessed and updated periodically.

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[11] SCI Consulting Group and LWA. January 2019." Green Infrastructure Funding Nexus Evaluation". Excerpts from this report are used in this GI Plan section. This report can be found as Appendix 6 in the Green Infrastructure Design Guide, another document included by reference as part of this Green Infrastructure Plan.

Potential San Mateo Flood and Sea Level Rise Resiliency Agency

While not included in the following matrix, another source for potential funding may be from San Mateo County and the City/County Association of Governments (C/CAG). The County and C/CAG are currently developing a proposal for a new agency, the San Mateo Flood and Sea Level Rise Resiliency Agency, to plan, build and maintain projects of regional significance which could complement, or possibly supplement, local GI needs as well as address sea level rise and flooding challenges. Funding could be provided through a countywide property tax or similar mechanism. In addition, the City will review other projects to determine if GI implementation and funding can be integrated into other transportation, utility, and other improvement projects that already have funding or have access to other funding streams. These and other potential GI funding sources will be monitored by the City and the Potential Funding Opportunities table will be assessed and updated periodically.

Past and Current Infrastructure Funding Efforts

To fund public projects that incorporated green infrastructure in the past, such as the Davey Glen Park, Belmont has used Planned Park fees, funding from San Mateo County, and various grants. The City of Belmont continues to search and submit for grants to support a variety of public improvement projects which can include the opportunity for green infrastructure, such as recently submitted Proposition 84 Stormwater Grant Program and Coastal Conservancy Proposition 1 grant for the Ruth Avenue Green Street Project and is investigating other grant funding such as the Prop 68 State of California Parks & Water Bond for other street, park, and flood control projects including the Belmont Creek Watershed Management Plan improvements. Projects identified in and funded under the City's Capital Improvement Program (CIP) may also provide the ability to add green infrastructure into public parks, streets, and other projects during the planning and design phases, which provides an opportunity to fund green infrastructure projects in tandem with these other improvement initiatives.

b. Potential Funding Opportunities Evaluation

The range of green infrastructure techniques and applications allows for the consideration of a variety of funding approaches. Based on the funding types, sources, description, and pros and cons identified in the Green Infrastructure Funding Nexus Evaluation, the City of Belmont has evaluated funding opportunities for implementing identified and future stormwater and green infrastructure projects. The matrix below provides a summary of the evaluation of GI potential funding opportunities, options, and strategies as well as concise information about the nexus to GI, what is funded, funding requirements, and potential for use by Belmont.

Funding opportunities were evaluated on a variety of factors including:

- existing funding and organizational structures within Belmont
- whether ballot approval, approval by voters, is needed to implement the funding option
- past voting outcomes for balloted measures in Belmont
- likelihood for grant approval
- ability to support shared projects/partnerships projects

Based on the evaluation of funding opportunities, Belmont has identified the funding source opportunities and approaches that will be considered for use or to be explored in greater detail for potential use. These, and other funding source opportunities determined to not be appropriate for Belmont, are listed in the table below. In addition, their nexus to GI, GI funding capabilities, funding requirements, and potential and rational as a GI funding opportunity for Belmont are summarized.

The “GI Nexus” column explains how the type of funding is connected to green infrastructure and can be leveraged to fund GI projects. Proving nexus to interrelated infrastructure funding sources is necessary to link development impacts and compliance needs. This column conceptualizes the importance of GI regarding the funding categories.

“GI Funding Capabilities” identifies where the funds can be applied to, being: planning, staff (time), capital costs, and operations and maintenance. It is important to reiterate that some funding sources may be able to cover some, but not all, of these categories and it is likely that more than one avenue for funding will be necessary.

The “Requirements” column indicates the significant compliance requirements or actionable steps that are necessary to obtain the funding source. These requirements touch on information on regulatory compliance, voting approval rate, applications, necessary reporting, existing or planned conditions, and approach.

Finally, the Potential GI Funding Opportunity column indicates the viability of the opportunities as a possible funding source as evaluated and determined by Belmont: Yes, Possible, Explore, or No and a concise rationale to support the finding. Where a funding opportunity is marked “Yes” or “Possible”, that indicates where the City has either experienced success in obtaining GI funding or is interested in pursuing as a funding opportunity for GI projects. The “Explore” label is given to funding opportunities that may provide possible avenues for funding GI projects, but viability is reliant on additional factors or further investigation is needed. Funding opportunities marked “No” are considered highly unlikely for Belmont to pursue as a funding source for GI projects.

Table 8-1: Tool Box of Potential Funding Opportunities

Funding Category/ Opportunities	GI Nexus	GI Funding Capabilities	Requirements	Potential GI Funding Opportunity
Traditional Methods –Balloted Approaches				
Parcel Tax	Can fund all or any parts of a GI program as stipulated in the ballot questions and authorizing ordinance	Staff, Planning, Capital, O&M	Typically require a 2/3 voter approval	**Possible.** This could be a viable funding source for the City but would need to include more than just green infrastructure for the proposed improvements.
Special Tax	Business License Tax; Vehicle License Fees; Sales Tax; Utility Users Tax; Transient Occupancy Tax	Staff, Planning, Capital, O&M	Typically require a 2/3 voter approval	**No.** 2/3 vote to approve will be difficult – the City went through a general tax which barely passed.
Property Related Fee	Establishes Storm Drainage as a separate utility service and can fund all or any parts of a GI program	Staff, Planning, Capital, O&M	Prop 218 compliance; rigorous rate study; must define services and service area; property owner approval for non-water, sewer and garbage	**Possible.** This could be a viable funding source if it were part of a larger stormwater drainage fee.
General Obligations Bond	Can fund capital GI projects through debt taken on by municipality	Planning, Capital	Voter approval at 2/3 level; will need financial advising consultant	**No.** City will not borrow funds for these types of improvements. Also, 2/3 vote to approve will be difficult and unlikely to pass.

Traditional Methods – Non-balloted Approaches				
Senate Bill 231	Allows for adoption of property related fees without having to go to ballot	Staff, Planning, Capital, O&M	Cost of service analysis; rate study; Prop 218 protest hearing	**No.**
Regulatory Fee (plan, check, and inspection)	Fees and charges for performing administrative activities related to GI	Staff	Cannot exceed the actual cost of performing activities such as permit issuance, inspection, onsite mitigation, etc.	**Yes.** Regulatory fees already captured in the encroachment permit fee and on NPDES fee on development.
Realignment of Services	Leverage funding from other City departments for stormwater activities or reassign the stormwater activity to another department	Staff, Planning, Capital, O&M	Prop 218 compliance for realignment to water, sewer, or garbage must demonstrate applicability	**Explore.** Would need to investigate opportunity for City.
Developer Impact Fee	Could incorporate fees for mitigating stormwater impacts to help fund GI. Would not relieve developer of NPDES requirements	Planning, Capital	Must comply with AB 1600 and include a rigorous nexus study	**Possible.** Would need to investigate.
Integration with Transportation or Utility Project	Make the connections between roadways and drainage systems that are green and complete, where allowed by conditions of the funding source.	Planning, Capital	Examples may include: permeable pavements; roadside rain gardens; cisterns	**Possible.** Limited opportunities in the City.

Grant	One-time infusion of funds for qualifying projects from State or other granting authority	Planning, Capital	Application, reporting, coordination, and grant deliverables	**Yes.** Can apply as opportunities arise. Potential grant programs can include those related to stormwater, flooding and climate resiliency, green streets, safe routes to school, and other school focused opportunities with an educational component.
Loan	Debt instruments can help accelerate project delivery while paying off debt over time	Planning, Capital	Must have dedicated revenue stream to pay off debt; must have adequate credit rating to secure reasonable interest rates; some bonds require voter approval	**Explore.** This is unlikely opportunity for funding, unless a source of funds to repay the debt is identified and/or is part of a larger program encompassing other benefits.
Special Financing Districts				
Benefit Assessment	Can fund the construction and maintenance of GI projects	Planning, Capital, O&M	Prop 218 compliance; rigorous engineer's report; must deduct general benefit from special benefit; property owner approval is required through a ballot proceeding (weighted voting); works best with new development due to voting requirement	**No.**
Community Facilities District	Can fund the construction and maintenance of GI projects	Planning, Capital, O&M	Requires vote by majority of landowners or 2/3 majority of registered voters	**No.**
Business Improvement District	Business and property owners' tax themselves to build and maintain GI improvements	Planning, Capital, O&M	Formed by a municipality through a notice and protest hearing process	**No.**

Enhanced Infrastructure Financing District	Captures property tax increment for building and maintaining infrastructure like GI	Planning, Capital	With no debt: Establish a public finance authority; adopt financing plan; resolutions from participating agencies. With debt: All of the above; get approval from at least 55% of voters in district.	**Explore.**
Alternative Compliance				
Alternative Compliance	Allows developers who cannot meet GI requirements on-site to build (or pay for) off-site construction of GI elements	Staff, Planning, Capital, O&M	Municipality would need to have alternative projects ready–- could be done case by case	**No.** City does not have these types of projects.
In-lieu Fee Challenge	Allows developers who cannot meet GI requirements on-site to build or pay for off-site construction of GI elements	Staff, Planning, Capital, O&M	Municipality would need to estimate the costs of mitigation – could be done case-by-case	**Possible.**
Credit Trading Program	Creates GI Credit program for developers and others to trade GI responsibilities to others who have better capability to meet GI goals	Planning, Capital, O&M	A municipality (or regional entity) must create credit trading program including: Definition of GI credits, relative value of credits, timing of responsibilities, eligibility	**Potential.** Potential if others have projects or if City can credit public right of way for treatment on private property
Partnerships				
Multi-Agency Partnership	Encourages partnerships with non-stormwater agencies to explore GI co-benefits in their work.	Staff, Planning, Capital	Examples may include: spreading basins for groundwater agencies; GI project sites on school grounds; GI on housing authority sites. Can generate credits for Credit Trading Program.	**Possible.** May participate in regional projects, credit transfers, and projects with other agencies.

Transportation	Encourages partnerships with transportation agencies to explore GI co-benefits in their work and take advantage of Complete or Green Streets programs	Staff, Planning, Capital, O&M?	Examples may include: Permeable pavements; rain gardens	**Possible.** May participate in regional projects and projects with other agencies. Opportunities are limited.
Caltrans Mitigation Collaboration	Caltrans looks for opportunities for off-site mitigation of stormwater impacts of their highways	Planning, Capital	Local municipalities may enter in a cooperative agreement with Caltrans to build GI as a way for them to mitigate stormwater impacts of their highways	**Yes.** Opportunities may be limited.
Public-Private Partnership (P3)	Private enterprises can provide overall solutions to GI programs through better access to resources and capital	Planning, Capital, O&M	P3 is primarily a delivery system for projects where debt provides near-term funding and project acceleration	**No.**
Volunteers	Volunteer groups can be a resource for GI operations and maintenance (O&M) as well as program planning	Planning, Capital, O&M	To be effective, volunteers need organization and oversight; can be used to supplement paid contractors or City staff, or perform entire projects	**Possible.**
Property Owners doing new/ redevelopment	Existing and new and redevelopment residential structures and pavement create and increases impervious area	Staff, Planning, Capital, O&M	City can require single family residential projects that exceed a City-defined threshold to incorporate C.3 stormwater improvements or improve frontages to a minimum stormwater treatment/ infiltration standard	**Yes.**

9.0 Outreach and Education

Belmont has provided outreach and education to staff, decision makers, and the community regarding green infrastructure in general and specifically for the development of the City's Green Infrastructure Workplan and Green Infrastructure Plan.

a. Coordination with SMCWPPP and Inter-Agency Efforts

Belmont is a participating member of the San Mateo Countywide Water Pollution Prevention Program (Countywide Program), a program that is a partnership of the City/County Association of Governments (C/CAG), the County of San Mateo, and each incorporated jurisdiction in the county, that share a common National Pollutant Discharge Elimination System (NPDES) permit. The Countywide Program convened a Green Infrastructure Committee (GI Committee) to collaborate and comment upon the development of materials to support the preparation of GI Plans. Belmont's GI Plan was developed in collaboration with internal City staff, coordination with consultants, and the Countywide Programs' guidance.

The Countywide Program has developed materials for use by member agencies. This includes the Flows to Bay website, a public education and outreach program, flyers about green streets and green infrastructure, and development of presentations to educate elected officials and other stakeholders.

The City has also been collaborating with adjacent cities and the county as well as other stakeholders such as Caltrans in addressing flooding and other issues. These projects have offered the ability for the opportunity to educate area residents, businesses, decision makers, and others to understand underlying concerns and options to address them including the use of green infrastructure.

b. Belmont Efforts

Belmont has worked extensively to educate staff, decision makers, and the community regarding green infrastructure and the preparation of its GI Plan. Staff has held internal ongoing multi-disciplinary meetings to discuss the need, goals, and vision for both Belmont's GI WorkPlan and GI Plan.

The Green Infrastructure Workplan was presented to City Council and adopted in May 2017. The Green Infrastructure Plan was presented to the Planning Commission on July 16, 2019, the Parks and Recreation Commission on July 24, 2019, and the City Council for adoption on September 24, 2019. Also, the Twin Pines Park Master Plan development process and public hearings included discussions about green infrastructure. These meetings provided the public a chance to review and provide input as part of the outreach and education.

As discussed previously, Belmont staff has participated on a quarterly basis with the SMCWPPP GI Committee for the past two years to review and discuss GI Plan related elements and approaches. This ongoing support that helped with coordination and providing template material. In addition, staff has participated training sessions related to green infrastructure including C.3 workshops held by the Countywide Program.

The City's website has a webpage focused specifically on green infrastructure at https://www.belmont.gov/departments/public-works/infrastructure/green-infrastructure. This robust webpage educates the community and others by defining and illustrating green infrastructure, explains how and where the City is incorporating green infrastructure, describes the City's goals and process in the development of their GI Plan, and directs readers to the Countywide Program's www.flowstobay.org website for additional information. In addition, the City has established many local programs, including an "Adopt-a-Storm Drain" program to educate the community and have resident's be proactive in their neighborhoods to help limit clogging and localized flooding and report illegal dumping and drainage into the City's storm drain system that would impact water quality.

The City also has used Countywide Program provided green infrastructure flyers, posters, and other materials to educate community residents and employees.

Appendices

A. Belmont-specific Prioritization Factors and Criteria with Weighting Tables

Green Streets Screening and Prioritization

Criteria	Source	Points						Weight Factor	Maximum Pts
		0	1	2	3	4	5		
Screening Criteria Factors									
Slope (%)	San Mateo SWRP (modified)	No	Yes if slope is ≤ 5					--	—
Prioritization Factors									
Imperviousness (%)	San Mateo SWRP	X < 40	40 ≤ X < 50	50 ≤ X < 60	60 ≤ X < 70	70 ≤ X < 80	80 ≤ X < 100	1	5
Hydrologic Soil Group	San Mateo SWRP	--	D	Unknown	C	B	A	1	5
Slope (%)	San Mateo SWRP (modified)	--	4 < X ≤ 5	3 < X ≤ 4	2 < X ≤ 3	1 < X ≤ 2	0 < X ≤ 1	1	5
Proximity to Flood-prone Channels (miles)	San Mateo SWRP	Not in sub-basin	3 < X	--	1 < X ≤ 3	--	X ≤ 1	2	10
Areas with localized flooding	Belmont-specific	No					Yes	2	10
Contains PCBs Risk Areas	San Mateo SWRP	None	--	--	Moderate	--	High	2	10
Street Type	San Mateo SWRP (modified)	--	Highway on ramps/off ramps	--	Local/Alley	Arterial	Collector	1	5
Complete Streets Projects	Belmont-specific	No					Yes	2	10
Streets identified for future or with existing storm drains, swales, other drainage improvements	Belmont-specific	No					Yes	2	10
Currently planned by City or co-located with other City project	San Mateo SWRP (modified)	No			Strong Potential		Yes	2	10
Project is within a Planned Development Area (PDA) [BVSP]	San Mateo SWRP (modified)	No			--		Yes	2	10
"Safe Routes to School" program	San Mateo SWRP	No					Yes	2	10
Project is part of a street improvement at a high-injury or high-frequency collision intersection or street segment	San Mateo SWRP	No					Yes	2	10
Project identified in approved master plan, community plan, policy, etc.	Belmont-specific	No					Yes	1	5
Within the drainage area of Twin Pines Park Regional Project	Belmont-specific	Yes = -10						1	0/-10
Drains to TMDL water	San Mateo SWRP	No					Yes	1	1
Above groundwater basin	San Mateo SWRP	No		Yes				1	2
Augments water supply	San Mateo SWRP	No	Yes					1	1
Water quality source control	San Mateo SWRP	No	Yes					1	1
Reestablishes natural hydrology	San Mateo SWRP	No	Yes					1	1
Creates or enhances habitat	San Mateo SWRP	No	Yes					1	1
Project is within 1/4 mile of identified RHNA site or other affordable housing site	Belmont-specific	No	Yes					1	1
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Parcel Based Green Infrastructure
Screening and Prioritization

Criteria	Source	Points						Weight Factor	Maximum Pts
		0	1	2	3	4	5		
Screening Criteria Factors									
Slope (%)	San Mateo SWRP	Properties with a predominant slope greater than 10% have not been included as opportunities						--	—
Parcel Ownership and Land Use	San Mateo SWRP (modified)	Other Uses - No	Public (other agency), Private Institutional, Park/Open Space - Yes					--	—
Prioritization Factors									
Parcel Ownership and Land Use	San Mateo SWRP (modified)		Private Institutional	--	Public (other agency)	--	Public (City)	1	5
Impervious Area (%)	San Mateo SWRP	X < 40	40 ≤ X < 50	50 ≤ X < 60	60 ≤ X < 70	70 ≤ X < 80	80 ≤ X < 100	1	5
Hydrologic Soil Group	San Mateo SWRP	--	D	Unknown	C	B	A	1	5
Slope (%)	San Mateo SWRP	5 < X ≤ 10	4 < X ≤ 5	3 < X ≤ 4	2 < X ≤ 3	1 < X ≤ 2	0 < X ≤ 1	1	5
Proximity to Flood-prone Channels (miles)	San Mateo SWRP	Not in sub-basin	3 < X	--	1 < X ≤ 3	--	X ≤ 1	2	10
Areas with localized flooding	Belmont-specific	No					Yes	2	10
Contains PCBs Risk Areas	San Mateo SWRP	None	--	--	Moderate	--	High	2	10
Complete Streets Projects	Belmont-specific	No					Yes	1	5
Streets identified for future or with existing storm drains, swales, other drainage improvements	Belmont-specific	No					Yes	2	10
Currently planned by City or co-located with other City project	San Mateo SWRP (modified)	No			Strong Potential		Yes	2	10
Project is within a Planned Development Area (PDA) [BVSP]	San Mateo SWRP (modified)	No			--		Yes	2	10
Project identified in approved master plan, community plan, policy, etc.	Belmont-specific	No					Yes	1	5
Within the drainage area of Twin Pines Park Regional Project	Belmont-specific	Yes = -10						1	0/-10
Drains to TMDL water	San Mateo SWRP	No					Yes	1	5
Above groundwater basin	San Mateo SWRP	No		Yes				1	2
Augments water supply	San Mateo SWRP	No	Yes					1	1
Water quality source control	San Mateo SWRP	No	Yes					1	1
Reestablishes natural hydrology	San Mateo SWRP	No	Yes					1	1
Creates or enhances habitat	San Mateo SWRP	No	Yes					1	1
Project is within 1/4 mile of identified RHNA site or other affordable housing site	Belmont-specific	No	Yes					1	1
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Regional Capture Screening and Prioritization

Criteria	Source	Points						Weight Factor	Maximum Pts
		0	1	2	3	4	5		
Screening Criteria Factors									
Slope (%)	San Mateo SWRP	Properties with a predominant slope greater than 10% have not been included as opportunities						--	—
Parcel Ownership and Land Use	San Mateo SWRP (modified)	Other Uses - No	Public (other agency), Private Institutional, Park/Open Space - Yes					--	—
Prioritization Factors									
Parcel Ownership and Land Use	San Mateo SWRP (modified)		Private Institutional		Public (other agency)	--	Public (City)	1	5
Impervious Area (%)	San Mateo SWRP	X < 40	40 ≤ X < 50	50 ≤ X < 60	60 ≤ X < 70	70 ≤ X < 80	80 ≤ X < 100	1	5
Parcel Size (acres)	San Mateo SWRP	0.25 ≤ X < 0.5	0.5 ≤ X < 1	1 ≤ X < 2	2 ≤ X < 3	3 ≤ X < 4	4 ≤ X	1	5
Hydrologic Soil Group	San Mateo SWRP	--	D	Unknown	C	B	A	1	5
Slope (%)	San Mateo SWRP	5 < X ≤ 10	4 < X ≤ 5	3 < X ≤ 4	2 < X ≤ 3	1 < X ≤ 2	0 < X ≤ 1	1	5
Proximity to Flood-prone Channels (miles)	San Mateo SWRP	Not in sub-basin	3 < X	--	1 < X ≤ 3	--	X ≤ 1	2	10
Areas with localized flooding	Belmont-specific	No					Yes	2	10
Contains PCBs Risk Areas	San Mateo SWRP	None	--	--	Moderate	--	High	2	10
Complete Streets Projects	Belmont-specific	No					Yes	1	5
Streets identified for future or with existing storm drains, swales, other drainage improvements	Belmont-specific	No					Yes	2	10
Currently planned by City or co-located with other City project	San Mateo SWRP (modified)	No			Strong Potential		Yes	2	10
Project is within a Planned Development Area (PDA) [BVSP]	San Mateo SWRP (modified)	No			--		Yes	2	10
Project identified in approved master plan, community plan, policy, etc.	Belmont-specific	No					Yes	1	5
Within the drainage area of Twin Pines Park Regional Project	Belmont-specific	Yes = -10						1	0/-10
Drains to TMDL water	San Mateo SWRP	No					Yes	1	5
Above groundwater basin	San Mateo SWRP	No		Yes				1	2
Augments water supply	San Mateo SWRP	No	Yes					1	1
Water quality source control	San Mateo SWRP	No	Yes					1	1
Reestablishes natural hydrology	San Mateo SWRP	No	Yes					1	1
Creates or enhances habitat	San Mateo SWRP	No	Yes					1	1
Project is within 1/4 mile of identified RHNA site or other affordable housing site	Belmont-specific	No	Yes					1	1
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B. Refined Belmont Evaluation for Green Infrastructure Opportunities

GI Opportunities-Belmont	Opportunity Type	Location	GI Potential/Description
GI Opportunities-Belmont	Street Opportunities	Ralston Ave Frontage Road- from Hiller St to Kedith St	High potential. Potential for corner curb extensions at cross streets and along red zones on the O'Donnel Park frontage. Curb extensions can include GI. This GI opportunity could be linked with rain gardens within O'Donnell Park.
GI Opportunities-Belmont	Street Opportunities	Ralston Ave and Hiller St Intersection	Moderate potential for joint project with Caltrans. Potential for rain garden at northeast corner of intersection that could take runoff from Hiller Street and/or Ralston Avenue. Would be at least partially within Caltrans right of way. Would require coordination with Caltrans.
GI Opportunities-Belmont	Street Opportunities	Ralston Ave island and frontage split	Moderate potential. Potential for rain garden at southwest end of island that could take runoff from "mainline" Ralston Avenue and/or "frontage" leg of Ralston Avenue.
GI Opportunities-Belmont	Street Opportunities	Granada/Masonic/Old County Rd- Loop with Ralston Ave	High potential. Conceptual pedestrian and bicycle (and street improvements) identified for improvements per the Ralston Ave Corridor Study and Improvement Plan and CIP Report. Potential for corner curb extensions at Granada/Masonic and Masonic/Old County Rd. Curb extensions can include GI.
GI Opportunities-Belmont	Street Opportunities	Pedestrian crossing of Shoreway Rd.	High potential. Improve pedestrian crossing that currently has a flashing beacon with bulbout of east side of street with bioretention, possibly provide rain gardens within landscaped area on west side of street that could take run off from Shoreway Road, Marine Parkway, and Island Parkway. May require coordination with Caltrans and Redwood City.
GI Opportunities-Belmont	Street Opportunities	Pedestrian crossing of Hiller St. at Biddulph Way	High potential. Improve Nesbit Elementary School pedestrian crossing with curb extensions at least on the northeast side of the street and possible at corners with Biddulph Way. Size extensions to allow for bioretention planters.
GI Opportunities-Belmont	Street Opportunities	Intersection of Oxford Way and Chesterson Ave	Moderate potential. Geometry of the intersection could be tightened up with curb extensions allowing space for rain gardens.
GI Opportunities-Belmont	Street Opportunities	Pedestrian crossing of Wessex Way and Granada Street	Moderate potential. Improve Nesbit Middle School pedestrian crossings at this intersection. There are existing small cobble paved floating islands that serve as semi-curb extensions; appears that there are drainage and street cleaning issues with the current design based on Streetview images. Intersection could be redesigned with true curb extensions and small bioretention areas.
GI Opportunities-Belmont	Street Opportunities	Old County Rd. various red curb areas	Moderate potential. Along the full length of Old County Road there are red curbed areas, some are quite long, which could become curb extensions with bioretention. These would provide combined traffic calming, parking control, and stormwater benefits.
GI Opportunities-Belmont	Street Opportunities	Ruth Avenue	High potential. From North Road to El Camino Real the current condition of the street is informal in terms of parking and pedestrian circulation with areas outside the travel lanes being paved, or unpaved, in various ways with discontinuous or now sidewalks. Reconstruction of the street to improve pedestrian circulation and define parking areas could integrate pervious paving and biotreatment areas.
GI Opportunities-Belmont	Street Opportunities	5th Ave and O'Neill Ave	High potential. Diagonal parking on 5th Avenue provides opportunity for larger sized rain gardens in curb extensions. Sidewalk on north side of O'Neill Avenue could also be improved and curb extension could provide space for bioretention. This improvement could be coordinated with three other intersections on 5th Avenue and possible mid-block improvements with bioretention.
GI Opportunities-Belmont	Street Opportunities	5th Ave and Broadway	High potential. Diagonal parking on northern leg of 5th Avenue provides opportunity for larger sized rain gardens in curb extensions. Improvement would provide traffic calming and improve pedestrian and ADA access. This improvement could be coordinated with three other intersections on 5th Avenue and possible mid-block improvements with bioretention.
GI Opportunities-Belmont	Street Opportunities	5th Ave and Harbor Boulevard	High potential. Curb extensions could help with providing handicap access ramps that are missing at this intersection and provide biotreatment areas. This improvement could be coordinated with three other intersections on 5th Avenue and possible mid-block improvements with bioretention.
GI Opportunities-Belmont	Street Opportunities	6th Ave and Harbor Boulevard	Good potential. Similar to Harbor Boulevard and 5th Avenue, this is a large intersection that has corners without handicap ramps. Curb extensions with bioretention would achieve pedestrian and ADA needs and provide for stormwater management.

GI Opportunities-Belmont	Opportunity Type	Location	GI Potential/Description
GI Opportunities-Belmont	Street Opportunities	Buena Vista Ave Diagonal Parking	High potential. Parking surface could be designed as pervious paving, or adjacent landscape within the front "yard" of the school could be designed as a rain garden to manage and treat street runoff. See also Cipriani Park and Cipriani Elementary School GI Opportunities. Down slope of the asphalt play area and adjacent parking, potentially into Cipriani Park, could include rain gardens to treat and manage runoff.
GI Opportunities-Belmont	Street Opportunities	Alameda de las Pulgas Diagonal Parking	High potential. Parking surface could be designed as pervious paving with intermittent biotreatment areas for pretreatment of street runoff.
GI Opportunities-Belmont	Street Opportunities	Alameda de las Pulgas - Four Corners Traffic Study Area	Low to high potential, depending upon location. The preferred alternative of the Four Corners Traffic Study for Alameda de las Pulgas has new mini-roundabouts at the cross streets of San Carlos Ave/Cranfield Ave, Chula Vista Dr, and El Verano Way, as well as corner bulbouts at the latter two intersections that could include rain gardens or stormwater curb extensions. Potential for new GI is reliant on extent of grading and ability to direct street runoff into the facilities, especially the mini-roundabouts, which potentially could require the roadway to be regraded to drain to it, or have the ability for stormdrain lines to daylight into them. San Carlos Ave/Cranfield Ave/Alameda de las Pulgas improvements will require coordination with City of San Carlos
GI Opportunities-Belmont	Park Opportunities	O'Donnell Park	High potential. Potential for rain gardens within the park to treat runoff from paved surfaces within the park, from Ralston Ave frontage road, and from Ralston Ave as it connects to the Hwy. 101 interchange.
GI Opportunities-Belmont	Park Opportunities	College View Way Open Space	Moderate potential. Open space could have a rain garden added to bring in street flow prior to it entering into existing surface drain on the east corner of the open space.
GI Opportunities-Belmont	Park Opportunities	Barrett Park	Moderate potential. See Barrett Community Center
GI Opportunities-Belmont	Park Opportunities	McDougal Park	Poor potential. Portions of park that are not in active use as ball fields are mainly sloping too steeply for installation of GI measures.
GI Opportunities-Belmont	Park Opportunities	Cipriani Park/Field	Moderate potential. Portions of the park bordering the elementary school could be designed to include rain gardens to treat run off from the parking lots and asphalt play area. See also Cipriani Park GI Opportunity
GI Opportunities-Belmont	Public and Quasi-Public Property Opportunities	City Corporation Yard	Moderate potential. Some areas of surface parking, and possibly other asphalt areas, could be permeable paving with intermittent biotreatment areas.
GI Opportunities-Belmont	Public and Quasi-Public Property Opportunities	Nesbit Elementary School	Moderate potential for joint projects. Depending on drainage patterns there are possible rain garden and other bioretention possibilities in and adjacent to the parking and vehicle circulation areas that could treat runoff from the paved areas, particularly in the areas that are "lightly" landscaped between the parking areas and the back of adjacent residential parcels.
GI Opportunities-Belmont	Public and Quasi-Public Property Opportunities	Notre Dame de Namur University	Moderate potential for a joint project. If the University were to undertake an improvement that is a C.3 regulated project, the City should explore the potential for enhancing the GI to provide additional stormwater benefit for subwatershed that includes the University.
GI Opportunities-Belmont	Public and Quasi-Public Property Opportunities	Sisters of Notre Dame de Namur	Moderate potential for a joint project. If this property, between the University and the High School including the elementary school site and other development, were to undertake an improvement that is a C.3 regulated project, the City should explore the potential for enhancing the project to provide additional stormwater management in the property's subwatershed.
GI Opportunities-Belmont	Public and Quasi-Public Property Opportunities	Notre Dame High School	Moderate potential for a joint project. If the High School were to undertake an improvement that is a C.3 regulated project, the City should explore the potential for enhancing the project to further treat and manage the subwatershed that includes the University.

GI Opportunities-Belmont	Opportunity Type	Location	GI Potential/Description
GI Opportunities-Belmont	Public and Quasi-Public Property Opportunities	Barrett Community Center	Moderate potential. There is a stormdrain inlet along Ralston Avenue towards the east end of the playfields and flow could be directed into a rain garden in the corner of the playfields. Entry off of Ralston Avenue could be designed to include rain garden(s). Parking lots could be upgraded to include permeable paving and in many cases there is adjacent landscaped area that could be designed to provide pretreatment. Garage/shed fronting Belburn Drive and other nearby structures could have roof runoff stored for irrigation of community garden. Other on-site GI opportunities.
GI Opportunities-Belmont	Public and Quasi-Public Property Opportunities	Immaculate Heart of Mary Catholic School	Poor potential for joint projects. Relationship to Merry Moppet Lane does not lend itself to joint projects.
GI Opportunities-Belmont	Public and Quasi-Public Property Opportunities	Charles Armstrong School	Poor potential for joint projects. This property is called out as a potential GI project site in the SWRP. Relationship of school site to Solana Drive does not provide good opportunity for a joint project.
GI Opportunities-Belmont	Public and Quasi-Public Property Opportunities	Cipriani Elementary School	Moderate to High potential for joint projects. Could include rain garden in "front yard" landscaped area to treat runoff from diagonal parking on Buena Vista Avenue. Run-off from asphalt play area and adjacent parking lot could be treated in adjacent on-site rain gardens or within Cipriani Park. Other on-site GI opportunities. Also see Cipriani Park and Buena Vista Avenue GI Opportunities
GI Opportunities-Belmont	Public and Quasi-Public Property Opportunities	Ralston Middle School	Poor potential for joint projects. This property is called out as a potential GI project site in the SWRP. Relationship of school site to Ralston Avenue does not provide good opportunity for a joint project.
GI Opportunities-Belmont	Public and Quasi-Public Property Opportunities	Fox Elementary School	Poor potential for joint projects. This property is called out as a potential GI project site in the SWRP. Relationship of school site to Ralston Avenue does not provide good opportunity for a joint project.
GI Opportunities-Belmont	Public and Quasi-Public Property Opportunities	City Properties on 5th between O'Neill Ave and Broadway	Unclear opportunity, what does city intend to do with these properties?
GI Opportunities-Belmont	Public and Quasi-Public Property Opportunities	City Hall Entry and Parking Lot	High potential. Expand upon existing rain garden at entry to City Hall and add other rain gardens within parking lot, especially at the southernmost area.
GI Opportunities-Belmont	Public and Quasi-Public Property Opportunities	Twin Pines Park Parking Lot	High potential. This regional infrastructure opportunity was defined by the city and C/CAG and included in the San Mateo Countywide Stormwater Resource Plan. It is defined as a subsurface infiltration chamber under the parking lot west of Twin Pines Manor. As mentioned in the project description in the SWRP, this could include other GI treatments in and adjacent to the parking lot, including permeable pavement or bioretention.
GI Opportunities-Belmont	Public and Quasi-Public Property Opportunities	CalTrain Parking Lot (1 of 3 pins)	High potential for joint project. Vacant areas and larger landscape areas within parking lot can be used for rain gardens for both adjacent street and parking lot runoff. Catch basin in parking lot just to the north. Potential to place underground infiltration systems or pervious pavement in parking lots. Will require coordination with Caltrain.
GI Opportunities-Belmont	Public and Quasi-Public Property Opportunities	CalTrain Parking Lot (2 of 3 pins)	High potential for joint project. Entry Areas, vacant areas and larger landscape areas within station area/parking lot on both sides of Ralston Ave and at Old County Road/Ralston can be used for rain gardens for both adjacent street and parking lot runoff. . Potential to place underground infiltration systems or pervious pavement in parking lots. Will require coordination with Caltrain. Will need to confirm who owns parcel at SW corner of Old County Road/Ralston.
GI Opportunities-Belmont	Public and Quasi-Public Property Opportunities	CalTrain Parking Lot/Right of Way (3 of 3 pins)	High potential for joint project. Vacant areas and larger landscape areas within parking lot can be used for rain gardens for both adjacent street and parking lot runoff. Vacant areas continue to the north. Potential to place underground infiltration systems or pervious pavement in parking lots. Need to confirm Caltrain owns vacant parcels to north of parking lot. Will require coordination with Caltrain.

GI Opportunities-Belmont	Opportunity Type	Location	GI Potential/Description
GI Opportunities-Belmont	Public and Quasi-Public Property Opportunities	Central Elementary School	Poor potential for joint projects. City school not on Stormwater Resource Plan. While there are large grass areas and parking, the school is surrounded by steep terrain and no easy way to put rain gardens along Middle Rd or school entry road. Other uses back up to school grounds. Potential to manage runoff from school site with pervious pavement and rain gardens.

C. Example GI Plan Text Summarizing Results of the Reasonable Assurance Analysis

To:	Matt Fabry, San Mateo Countywide Water Pollution Prevention Program
From:	Stephen Carter, Paradigm Environmental
Date:	5/3/2019
Re:	Example Green Infrastructure Plan text summarizing results of the Reasonable Assurance Analysis

Paradigm is currently leading C/CAG's efforts to perform a Reasonable Assurance Analysis that demonstrates the amount of green infrastructure needed to meet the portions of the PCB and mercury load reductions required by the Municipal Regional Stormwater Permit to address Total Maximum Daily Load wasteload allocations over specified compliance periods. Results of the Reasonable Assurance Analysis can be used to set goals for green infrastructure implementation, which can be incorporated within Green Infrastructure Plans currently being prepared by the C/CAG member agencies. The following is example text that each C/CAG member agency can use as a template to tailor discussions incorporated within each agency's Green Infrastructure Plan. The purpose of this example text is to provide a consistent narrative for discussion of the Reasonable Assurance Analysis and outcomes for the Permittees of San Mateo County. This portion of the Reasonable Assurance Analysis only addresses the Green Infrastructure requirements of the Municipal Regional Permit, not the other source control measures that will be evaluated in the Total Maximum Daily Load implementation plans submitted in September 2020. Each agency may tailor this text, incorporating their respective Reasonable Assurance Analysis results specific to each jurisdiction. The text also refers to the following two separate documents that can either be included within appendices of each Green Infrastructure Plan, or referenced as separate documents:

- San Mateo County-Wide Reasonable Assurance Analysis Addressing PCBs and Mercury: Phase I Baseline Modeling Report (June 2018)
- San Mateo County-Wide Reasonable Assurance Analysis Addressing PCBs and Mercury: Phase II Green Infrastructure Modeling Report (under development)

1 REASONABLE ASSURANCE ANALYSIS AND GREEN INFRASTRUCTURE IMPLEMENTATION GOALS

The Municipal Regional Stormwater Permit (MRP) (Order No. R2-2015-0049) requires the development of Green Infrastructure (GI) Plans (Provision C.3) and Polychlorinated Biphenyls (PCBs) and Mercury Control Measure Implementation Plans (Provisions C.11 and C.12) that provide the necessary pollutant load reductions to meet Total Maximum Daily Load (TMDL) wasteload allocations (WLAs) over specified compliance periods. A key component of these plans is a Reasonable Assurance Analysis (RAA) that quantitatively demonstrates that proposed control measures will result in sufficient load reductions of PCBs and mercury to meet WLAs for municipal stormwater discharges to the Bay. The City/County Association of Governments (C/CAG) of San Mateo County, via its San Mateo Countywide Water Pollution Prevention Program (SMCWPPP), led a county-wide effort to develop an RAA to estimate the baseline PCB and mercury loads to the Bay, determine load reductions to meet WLAs among San Mateo County Permittees, and set goals for the amount of GI needed to meet the portion of PCB and mercury load reduction the MRP assigns to GI (SFBRWQCB 2015). Appendix X and Y include documentation of the county-wide RAA, including:

- Phase I Baseline Modeling Report – Provides documentation of the development, calibration, and validation of the baseline hydrology and water quality model, and the determination of PCB and mercury load reductions to be addressed through GI implementation (SMCWPPP 2018).
- Phase II Green Infrastructure Modeling Report – Provides documentation of the application of models to determine the most cost-effective GI implementation for each municipality, setting stormwater improvement goals for the GI Plan (SMCWPPP 2019).

The following sections provide an overview of the purpose of the RAA, and a summary of RAA results for Menlo Park to serve as stormwater improvement goals that set the stage for an adaptive management approach.

1.1 Purpose of the Reasonable Assurance Analysis

In 2017, the U.S. Environmental Protection Agency (EPA) Region 9 released *Developing Reasonable Assurance: A Guide to Performing Model-Based Analysis to Support Municipal Stormwater Program Planning* (EPA RAA Guide) (USEPA 2017), which provides guidance on the technical needs of the RAA and considerations for model selection. Building upon the EPA RAA Guide, the Bay Area Stormwater Management Agencies Association (BASMAA) prepared the *Bay Area Reasonable Assurance Analysis Guidance Document* (Bay Area RAA Guidance) (BASMAA 2017), which provides specific guidance on modeling to support RAAs performed in the Bay Area to meet MRP requirements, address TMDLs for PCBs and mercury, and support GI planning. The EPA RAA Guide and Bay Area RAA Guidance both outline essential steps for performing an RAA, as depicted in Figure 1-1.

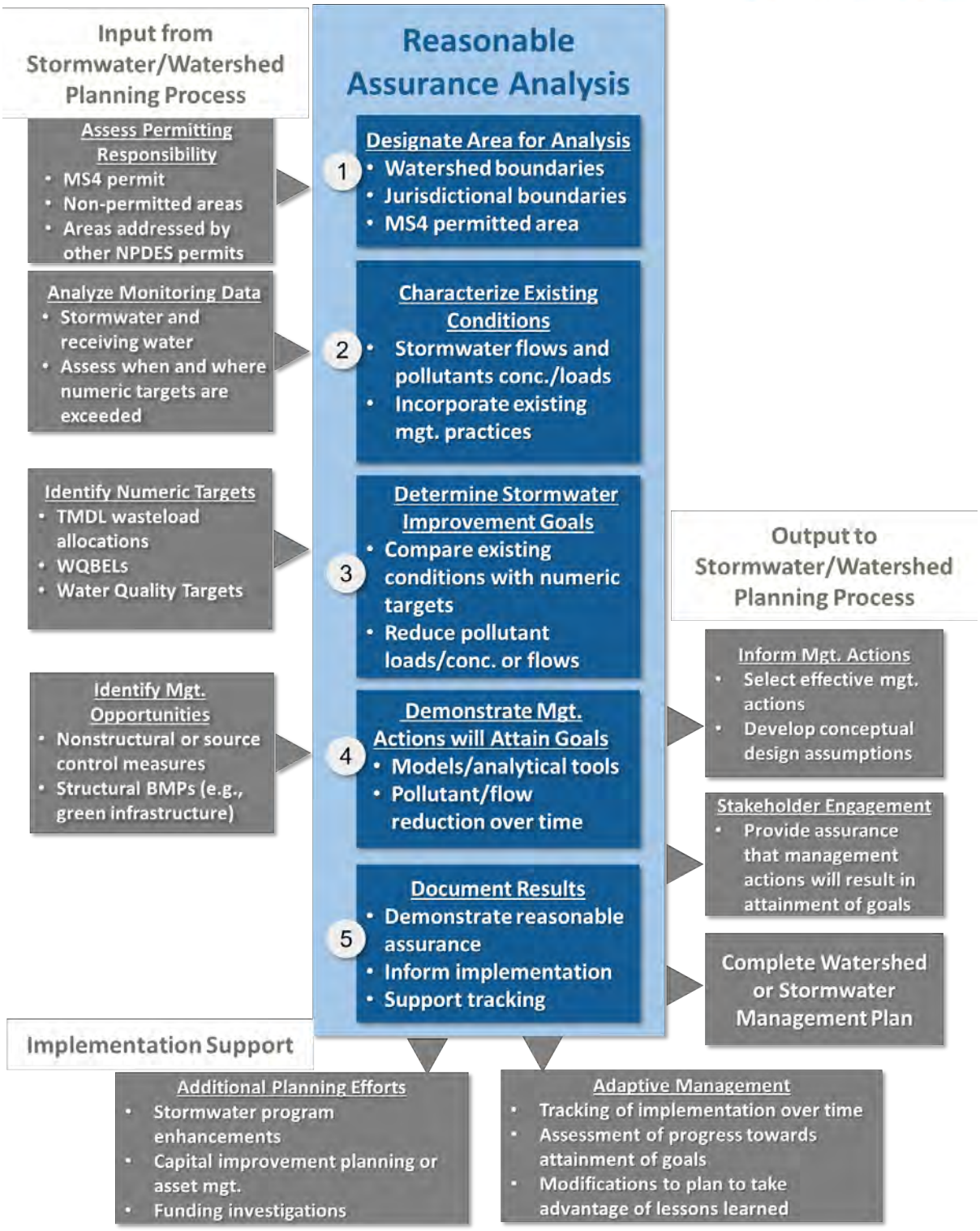

Figure 1-1. RAA Process Flow Chart (USEPA 2017).

Depending on the audience, the purpose of the RAA can vary in terms of what constitutes reasonable assurance, and it is important to consider not just the targets for pollutant load reductions, but also the effectiveness of information management and engineering and economic feasibility. The EPA RAA Guide provides an example of three differing perspectives for defining reasonable assurance (USEPA 2017):

- **Regulator Perspective** - Reasonable assurance is a demonstration that the implementation of a GI Plan will result in sufficient pollutant reductions over time to address TMDL WLAs or other targets specified in the MRP.
- **Stakeholder Perspective** - Reasonable assurance is a demonstration that specific management practices are identified with sufficient detail, and implemented on a schedule to ensure that necessary improvements in water quality will occur.
- **Permittee Perspective** - Reasonable assurance is based on a detailed analysis of the TMDL WLAs and associated MRP targets themselves, and a determination of the feasibility of those requirements. The RAA may also assist in evaluating the financial resources needed to meet pollutant reductions based on schedules identified in the MRP.

Appendix X and Y provide full documentation of the technical approaches and results of the SMCWPPP RAA, which are consistent with the recommendations of the EPA RAA Guide and Bay Area RAA Guidance.

1.2 Preliminary Identification of Opportunities for GI Projects

To support the RAA and GI Plans, C/CAG has initiated a number of planning efforts that identify opportunities for GI implementation. The following is a summary of those efforts:

- **LID for New Development and Redevelopment** – The MRP includes a Provision (C.3) for the integration of LID within new development and redevelopment. As LID techniques are implemented as new development and redevelopment occurs throughout the City, the benefits of such practices in terms of reducing urban runoff flows and associated pollutant loads can be considered as part of the pollutant load reductions attributed to implementation of GI. C/CAG worked with San Mateo County Permittees to compile information on LID practices that have been implemented within new development and redevelopment since water year 2003 (baseline year for the TMDL). C/CAG also performed an analysis to project the number of acres of future new development and redevelopment to be addressed through Provision C.3 by 2040. The RAA considers existing LID practices and projections of LID in future new development and redevelopment areas to estimate anticipated PCBs and mercury load reductions from 2003 to 2040.

- **Countywide Stormwater Resource Plan (SRP)** – The SRP is a comprehensive plan that identifies and prioritizes thousands of GI project opportunities throughout San Mateo County and within each municipal jurisdiction. Prioritized project opportunities include: (1) large regional projects within publicly owned parcels (e.g., public parks) that infiltrate or treat stormwater runoff generated from surrounding areas (e.g., diversion from neighborhood storm drain system; diversions from creeks draining large urban areas); (2) retrofit of publicly owned parcels with GI that provide demonstration of onsite LID designs; and (3) retrofit of public street rights-of-way with GI, or "green streets." The SRP included a multi-benefit scoring and prioritization process that ranks GI project opportunities based on multiple factors beyond pollutant load reduction (e.g., proximity to flood prone channels, potential groundwater basin recharge). Figure 1-2 provides an example of green street opportunities identified, scored, and prioritized by the SRP throughout San Mateo County (SMCWPPP 2017).

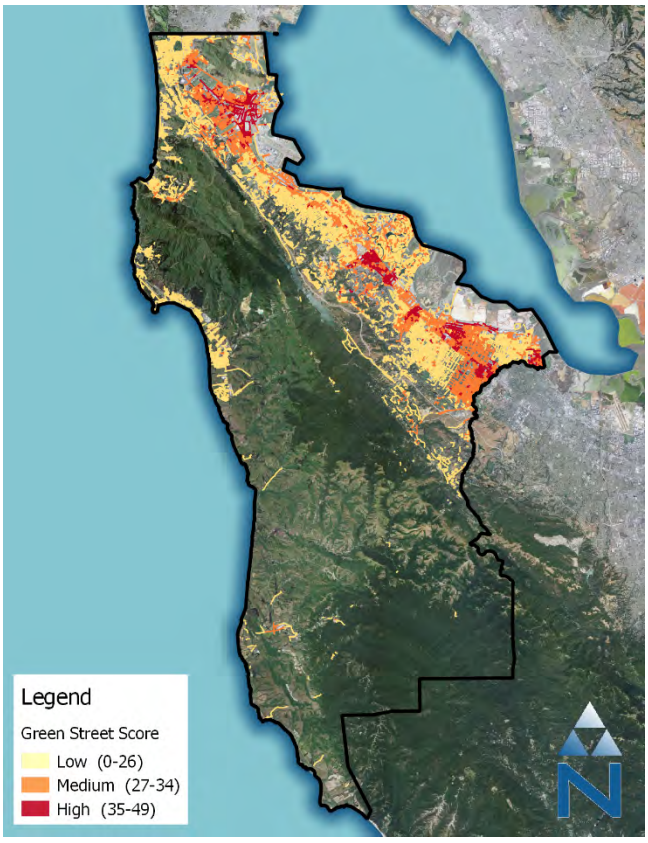

Figure 1-2. SRP Prioritized Green Street Opportunities.

The above efforts and resulting technical products provide preliminary identification of opportunities for GI projects. Those GI project opportunities serve as the foundation for the RAA and GI Plans as strategies are developed for implementation plans to meet the PCBs and mercury load reduction goals per the TMDL.

1.3 Description of the RAA Model

C/CAG performed a comprehensive, countywide modeling effort to provide: (1) simulation of baseline loads of PCBs and mercury for each of the County's watersheds and municipal jurisdictions discharging to San Francisco Bay; (2) estimation of necessary load reduction goals to meet requirements of the MRP and TMDL WLAs; and (3) determination of the amount of GI needed to address load reduction goals based on project opportunities identified Section 1.2. The RAA also provides analysis of alternative implementation scenarios through cost-benefit optimization that can inform cost-effective GI implementation within each municipal jurisdiction. These results set goals for GI Plans developed by each Permittee.

The analytical framework selected to support the San Mateo Countywide RAA is based on a linked system of models (Figure 1-3). Component models of the linked system include:

- **Loading Simulation Program C++ (LSPC)** – The hydrologic and water quality model selected for the baseline model of San Mateo County watersheds was the Loading Simulation Program in C++ (LSPC) (Shen et al., 2004), a watershed modeling system that includes

Hydrologic Simulation Program – FORTRAN (HSPF) (Bicknell et al. 1997) algorithms for simulating watershed hydrology, erosion, water quality, and instream fate and transport processes. The model can simulate upland loading of sediment, mercury, and PCBs and instream delivery and transport. LSPC is built upon a relational database platform, making it ideal for collating diverse datasets to produce robust representations of natural systems. LSPC integrates GIS outputs, comprehensive data storage and management capabilities, the original HSPF algorithms, and a data analysis/post-processing system into a convenient PC-based Windows environment. The algorithms of LSPC are identical to a subset of those in the HSPF model with selected additions, such as algorithms to address land use change over time. LSPC is an open-source public-domain watershed model available from EPA.

- **System for Urban Stormwater Treatment & Analysis Integration (SUSTAIN)** – Developed by EPA's Office of Research and Development, SUSTAIN was primarily designed as a decision-support system for selection and placement of GI projects at strategic locations in urban watersheds. It includes a process-based continuous project simulation module for representing flow and pollutant transport routing through various types of GI projects. A distinguishing feature of SUSTAIN is a robust cost-benefit optimization model that incorporates dynamic, user-specified project unit-cost functions to quantify the costs associated with project construction, operation, and maintenance. The cost-benefit optimization model runs iteratively to generate a cost-effectiveness curve that is sometimes comprised of millions of GI project scenarios representing different combinations of projects throughout a watershed. Those results are used to make cost-effective management recommendations by evaluating the trade-offs between different scenarios. The "benefit" component can be represented in several ways: (1) reduction in flow volume (2) reduction in load of a specific pollutant or (3) other conditions including numeric water quality targets, frequency of exceedances of numeric water quality targets, or minimizing the difference between developed and pre-developed flow-duration curves (USEPA 2009, Riverson et al. 2014).

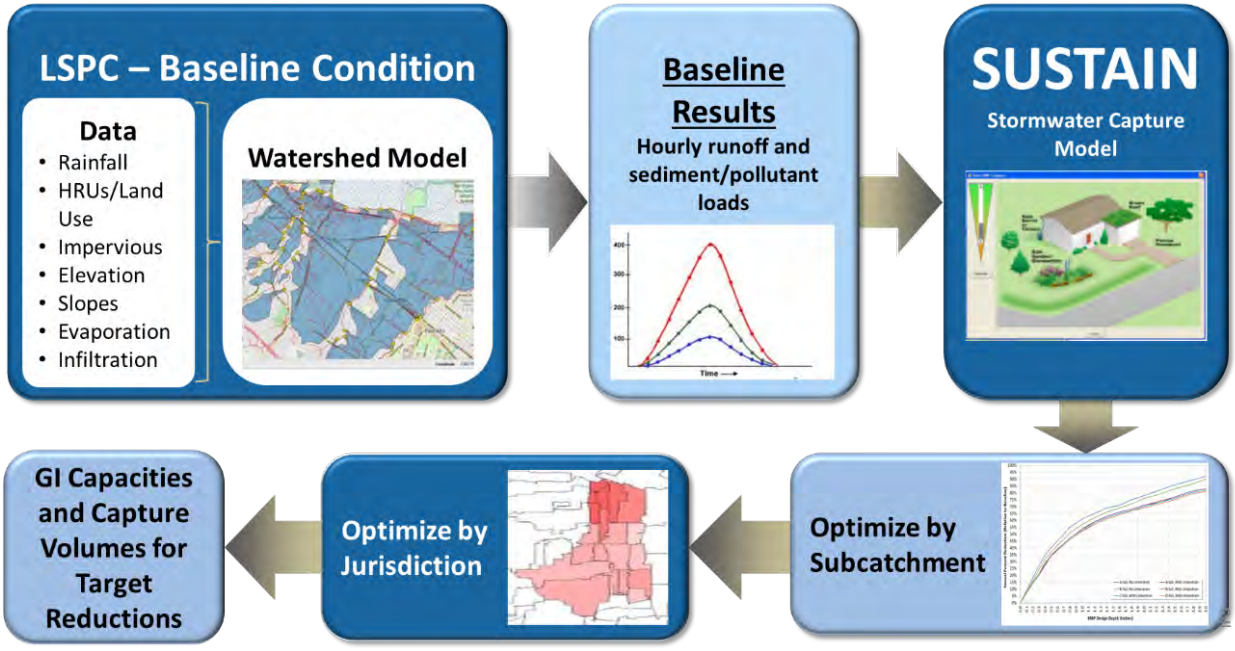

Figure 1-3. Modeling System Supporting the RAA.

For this analysis, model cost functions were developed from literature, including an inventory of projects in the Los Angeles region. Because of uncertainty regarding the true costs to C/CAG member agencies, results were normalized for relative comparison—the relative costs between project types is well represented for the optimization of project types in the RAA. In other words, although it is not be recommended to use the RAA costs to project county-wide or city-wide implementation costs, they are sufficiently resolved for comparing alternative implementation scenarios and selecting the most cost-effective strategies and combination of GI, LID, and regional stormwater capture projects to meet pollutant reduction targets.

The LSPC model provides a characterization of existing conditions and determination of necessary pollutant load reductions to meet requirements of TMDLs and the MRP. SUSTAIN provides analysis of the amount of GI needed to provide the portion of the load reduction assigned to GI by the MRP. Appendix X and Y provide more detailed discussion of the models and their application to the San Mateo County watersheds.

1.4 Model Considerations to Inform GI Plans

An important consideration for the RAA was the ability to track costs and benefits of different categories of GI projects within the model. This tracking was performed for GI project categories within each model subwatershed and municipal jurisdiction, and supports the selection of the most cost-effective implementation strategy to attain pollutant reduction goals. The RAA builds upon the previous planning efforts and represents the following generalized GI project categories in the model:

1. **Existing Projects**: Stormwater treatment and GI projects that have been implemented since FY-2004/05. This primarily consists of all of the regulated projects that were mandated to treat runoff via Provision C.3 of the MRP, but also includes any public green street or other demonstration projects that were not subject to Provision C.3 requirements. For regulated projects in the early years of C.3 implementation, stormwater treatment may have been achieved through non-GI means, such as underground vault systems or media filters.
2. **Future New and Redevelopment:** All the regulated projects that will be subject to Provision C.3 requirements to treat runoff via LID and is based on spatial projections of future new and redevelopment tied to regional models for population and employment growth.
3. **Regional Projects (identified)**: C/CAG worked with agencies to identify five projects within public parks or Caltrans property to provide regional capture and infiltration/treatment of stormwater, and included conceptual designs to support further planning and designs. Note – the model can be updated to include future identified projects to support adaptive management.
4. **Green Streets**: The SRP identified and prioritized opportunities throughout San Mateo County for retrofitting existing streets with GI in public rights-of-way. Green streets were ranked as high, medium, and low priority (within each subwatershed) based on a multiple-benefit prioritization process developed for the SRP.
5. **Other GI Projects (to be determined)**: Other types of GI projects on publicly owned parcels, representing a combination of either additional parcel-based GI or other Regional Projects. The SRP screened and prioritized public parcels for opportunities for onsite LID and Regional Projects. These opportunities need further investigation to determine the best potential projects.

The RAA considers the numerous GI project opportunities that exist within each municipal jurisdiction, and selects a suite or "recipe" of projects that can most cost-effectively address pollutant load reductions. The amount and combination of those GI projects can be determined through analysis of estimated load reductions and implementation costs. Figure 1-4 presents an example GI recipe showing the distribution of selected GI project categories versus incremental reductions in pollutant loading and increasing cost. Cost-benefit optimization of GI project opportunities was included to build upon the preliminary C/CAG SRP planning efforts above, and to properly inform and set meaningful goals for GI Plans. For each optimized combination of GI projects, SUSTAIN provides an estimate of the resulting pollutant load reduction and implementation costs, allowing for the comparison of GI implementation scenarios and the selection of the most cost-effective implementation plan to address pollutant reduction goals, whether at the scale of an individual jurisdiction or across municipal boundaries.

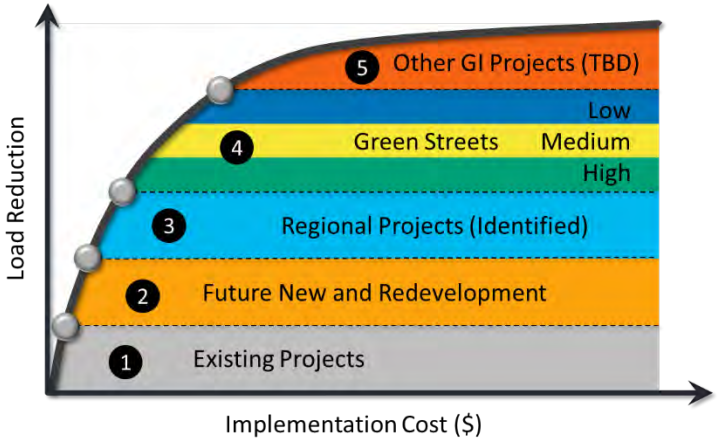

Figure 1-4. Example Implementation Recipe Showing General Sequencing of GI Projects.

1.5 Goals for Green Infrastructure Implementation

As discussed in Section 1.1, depending on the perspective of the regulators, stakeholders, or Permittees, the purpose and expectations of the RAA can vary in terms of how reasonable assurance is demonstrated. As a result, the output from the RAA must consider multiple perspectives and strike the right balance between detail and specificity while still leaving ample opportunity to allow for future adaptive management. The following are key considerations for the RAA output:

- **Demonstrate PCBs and Mercury Load Reductions** – The primary goal of the RAA is to quantitatively demonstrate that GI Plans and Control Measure Implementation Plans will result in load reductions of PCBs and mercury sufficient to attain their respective TMDL WLAs and the component stormwater improvement goals to be achieved with GI. Based on the baseline hydrology and water quality model (Appendix X), the RAA determined that a 17.6% reduction in PCB loads is needed to meet the GI implementation goals established by the MRP. Zero reduction in mercury loads was determined to be needed from MRP areas because baseline loads were predicted to be below the TMDL WLA for San Mateo County. As a result, a 17.6% reduction in PCB loads is established as the primary pollutant reduction goal for the GI Plan. However, there is some uncertainty in terms of how PCB source areas are represented in the model, which will require more monitoring and analysis in the future to gain an improved understanding of PCB source areas and the ability to target these areas with GI. Since PCBs are generally understood to be transported with cohesive sediment (e.g., silt and clay), cohesive sediment load can serve as a surrogate on which to base a load reduction target. The RAA considers a 17.6% reduction of cohesive sediment load as a more conservative surrogate until a better understanding is reached in terms of specific PCB source

areas within the County. If additional PCB source areas are confirmed, these areas could be targeted for source control measures or additional GI implementation, likely resulting in greater effectiveness for GI to reduce PCB loads in those areas, and thus redistributing or reducing the overall amount of GI needed to meet the load reduction target based on sediment loading estimates.

- **Develop Metrics to Support Implementation Tracking** – The MRP (Provision C.3.j) also requires tracking methods to provide reasonable assurance that TMDL WLAs are being met. Provision C.3.j states that the GI Plan "shall include means and methods to track the area within each Permittee's jurisdiction that is treated by green infrastructure controls and the amount of directly connected impervious area." Through C/CAG's current effort preparing a Sustainable Streets Master Plan for San Mateo County, a tracking tool will be developed that will enable calculation of metrics consistent with the results of the RAA and additional metrics relevant to sustainable street implementation. The tracking tool is planned for completion in 2020.
- **Support Adaptive Management** – Given the relatively small scale of most GI projects (e.g., LID on an individual parcel or a single street block converted to green street), numerous individual GI projects will be needed to address the pollutant reduction goals. All the GI projects will require site investigations to assess feasibility and costs. As a result, the RAA provides a preliminary investigation of the amount of GI needed spatially (e.g., by subwatershed and municipal jurisdiction) to achieve the countywide pollutant load reduction target. The RAA sets the GI Plan "goals" in terms of the amount of GI implementation over time to address pollutant load reductions. As GI Plans are implemented and more comprehensive municipal engineering analyses (e.g., masterplans, capital improvement plans) are performed, the adaptive management process will be key to ensuring that goals are met. In summary, the RAA informs GI implementation goals, but the pathway to meeting those goals is subject to adaptive management and can potentially change based on new information or engineering analyses performed over time.

The RAA output, or goals for GI implementation, attempt to identify the appropriate balance in terms of detail and specificity needed to address the above considerations. The RAA also considered multiple alternative scenarios that can inform implementation and the adaptive management process. These scenarios tested the underlining assumptions for GI implementation, and demonstrate the need for further research, collaboration among multiple Permittees, and incorporation of lessons learned in order to gain efficiencies and maximize the cost-effectiveness of GI to reduce pollutant loads over time. Four modeling scenarios were configured for this analysis (as summarized in Table 1-1):

Table 1-1. Model scenarios objectives and cost-benefit evaluation.

Load Reduction Objective	Percent of Total GI Cost to Achieve Reduction Objective		
	Jurisdictional	Countywide	*Total Savings (Jurisdictional vs. Countywide)*
Cohesive Sediment 17.6% Reduction	**Scenario 1**	**Scenario 2**	→ *Savings*
Total PCBs 17.6% Reduction	**Scenario 3**	**Scenario 4**	→ *Savings*
Total Savings (Sediment vs. PCBs)	↓ *Savings*	↓ *Savings*	↘ *Overall Savings*

The following factors are considered for each model scenario:

- **Load Reduction Objective** - With a cohesive sediment load reduction objective, Scenarios 1 and 2 represent the most conservative approaches. Those scenarios assume that given the uncertainties about PCB source areas, targeting an overall 17.6% load reduction of cohesive sediment in general (silts and clays) achieves the PCB load reduction objective for GI. Scenarios 3 and 4 assume that PCB sources are spatially distributed based on analysis of land use types. The cost-benefit optimization process targets those areas as having the highest likelihood of PCB sources. Scenarios 3 and 4 highlight the potential cost savings (relative to Scenarios 1 and 2) that could be realized if PCB sources are identified and targeted for GI implementation.
- **Jurisdictional verses Countywide** - There are many possible ways to achieve a 17.6% load reduction for all of San Mateo County. The "Jurisdictional" approach stipulates that each jurisdiction must individually achieve at least a 17.6% load reduction based on the population-based wasteload reduction for each jurisdiction. Conversely, the "Countywide" approach achieves the 17.6% load reduction countywide by allowing the model to allocate the countywide wasteload reduction via GI across jurisdictional boundaries. The countywide approach can provide significant cost savings over the jurisdictional approach, especially where pollutant sources are spatially concentrated. Figure 1 conceptually illustrates the jurisdictional versus countywide optimization approaches. Where there is cooperation among jurisdictions, results from these two scenarios can provide a useful analytical framework for cost-sharing and implementation of the most cost-effective management scenarios.

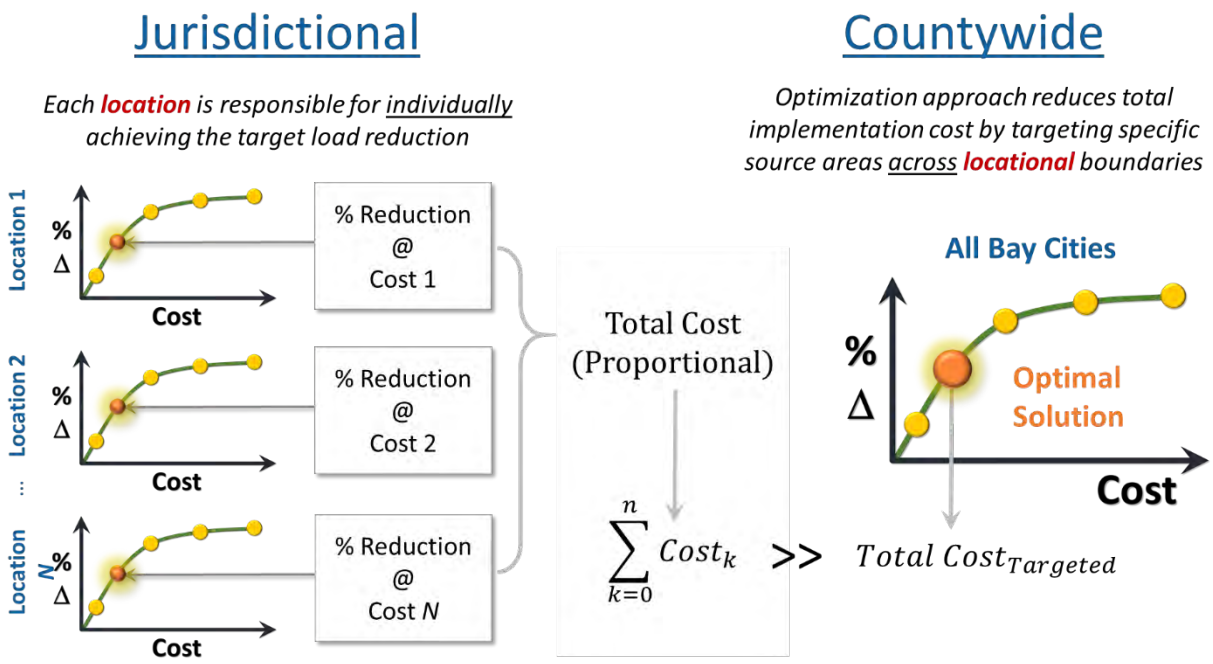

Figure 1-5. Jurisdictional vs. countywide approaches for cost-benefit optimization

Results of each of the four RAA scenarios are documented in Appendix Y. These results can inform the adaptive management process for GI implementation, and help garner support for collaborative efforts for GI implementation or further research of PCB source areas that can seek more cost-effective implementation strategies over time. Figure 1-6, Table 2, and Figure 1-7 provide a summary of Scenario 1 RAA results for the City of Menlo Park. Scenario 1 represents the most conservative scenario for GI implementation. The following steps outline how the process for formulating the scenario in the RAA model and using the results to set goals for GI implementation.

First: Based on GI project categories defined in Section 1.4, SUSTAIN was used to simulate effectiveness/load reductions and estimate planning-level costs for various combinations of GI projects within the City's jurisdiction (along the x-axis of Figure 1-6, from low pollutant reduction/effectiveness to high reduction/effectiveness). "Existing Projects" were locked in the model and included those GI projects included in the FY 2016-17 MRP Annual Report to the Water Board. "Future New & Redevelopment" is an estimation of the LID that will likely be implemented in the future in redevelopment areas (based on Provision C.3). "Green Streets" were based on prioritized and ranked (High, Medium, and Low) street retrofit opportunities reported in the SRP. For Menlo Park, the "Regional Project (Identified)" refers to the regional project located within Cartan Field that is currently under consideration by the Town of Atherton. "Other GI Projects" refer to additional GI projects needed, but specific locations for project opportunities within certain subwatersheds are yet to be determined.

Second: As depicted in Figure 1-6, a 17.6% reduction of modeled PCB for the City was identified as the target reduction to be attained through the implementation of GI (for Scenario 1, cohesive sediment reduction is used as a surrogate to represent load reduction of PCBs).

Third: SUSTAIN is used to provide cost-optimization and selection of the most cost-effective combination of GI projects to attain the target reduction. In Figure 1-6, this solution can be viewed as the vertical slice that intersects the point on the x-axis at 17.6% reduction. The combination of GI structural capacities in that slice at the 17.6% load reduction represents the proposed GI implementation plan for Menlo Park produced by the model. Table 2 provides details on that implementation plan for the five subwatersheds within the City's jurisdiction (represented by each row in table). Optimization results recommend that varying amounts of GI capacity in different subwatersheds (different rows) are needed to achieve the most cost-effective solution, but the overall PCBs load reduction addresses 17.6% (bottom row of table). The relative amount of GI capacities (normalized by area) for each subwatershed are shown in the map in Figure 1-7.

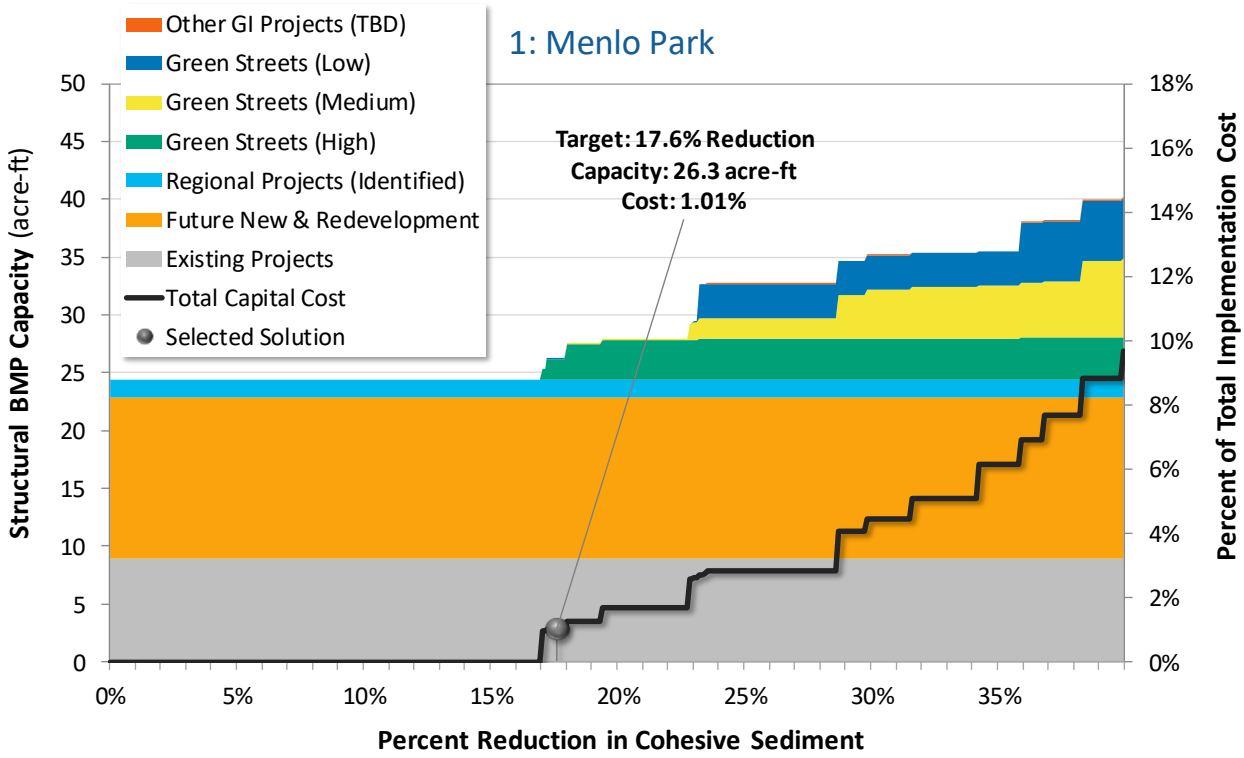

Figure 1-6. Scenario 1: Optimization summary for Menlo Park (sediment target, with regional identified project).

Table 2. Scenario 1: GI implementation strategy for Menlo Park (sediment target, with regional identified project)

Subwatershed ID	Management Metrics for GI			Green Infrastructure Capacity to Achieve 17.6% Reduction Target (Capacity expressed in units of acre-feet)							
				Existing/Planned			Green Streets				
	% Load Reduction PCBs (Annual)	Annual Volume Managed (acre-ft)	Impervious Area Treated (acres)	Existing Projects	Future New & Redevelopment	Regional Projects (Identified)	High	Medium	Low	Other GI Projects (TBD)	Total BMP Capacity (acre-ft)
220111	23%	1.26	26.11	1.12	1.12	0.03	2.19	0.08	--	--	**4.5**
220311	13%	1.10	0.27	--	--	--	--	0.03	0.05	--	**0.1**
221211	15%	0.50	4.22	0.86	0.10	0.02	--	--	--	--	**1.0**
230111	19%	69.81	94.39	4.81	7.32	--	--	--	--	--	**12.1**
230211	17%	37.95	80.00	2.10	5.41	1.50	0.91	--	--	--	**9.9**
Total	**17.9%**	**110.6**	**205.0**	**8.9**	**13.9**	**1.6**	**3.1**	**0.1**	**0.0**	**--**	**27.6**

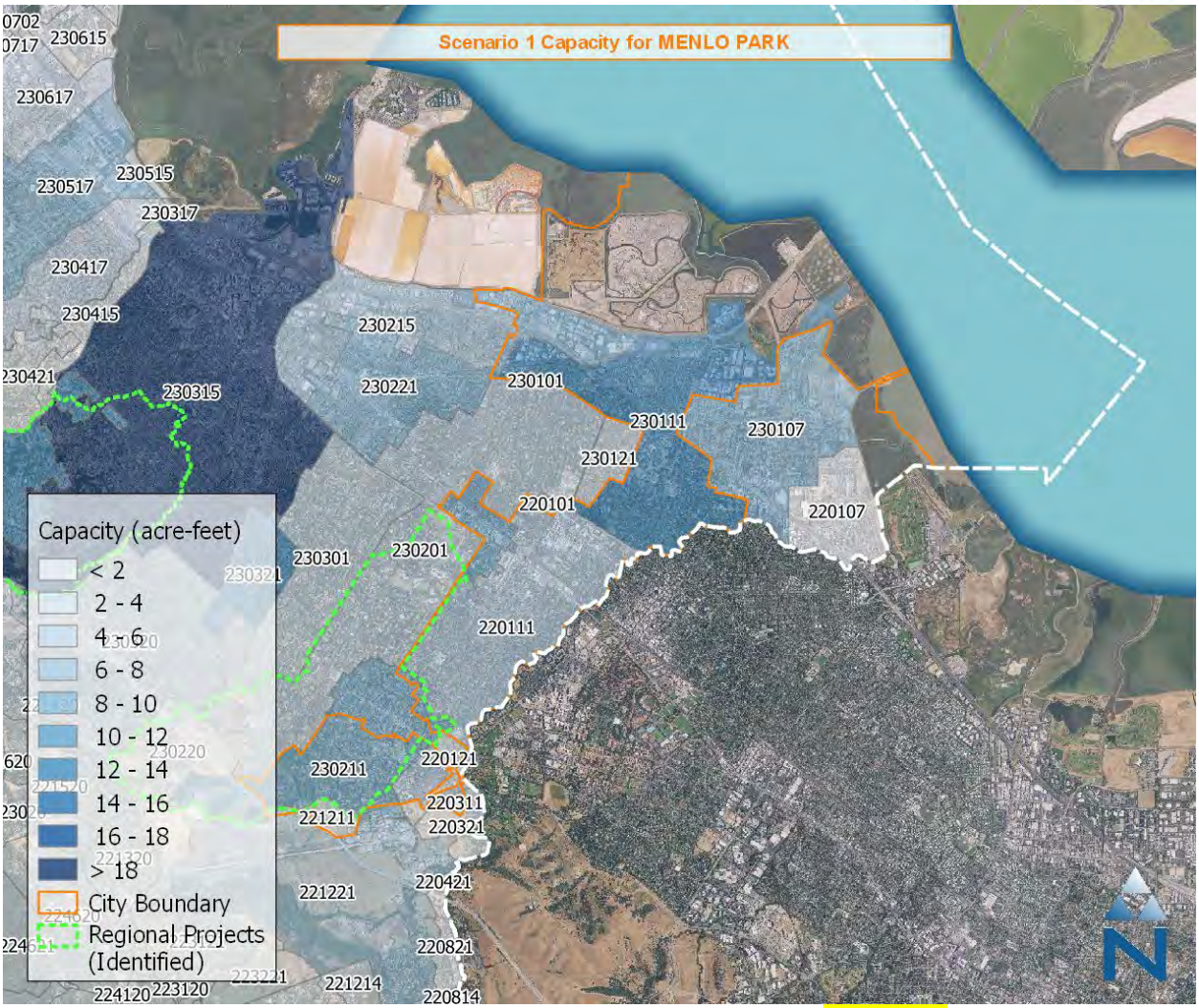

Figure 1-7. Scenario 1: Map of GI capacities within each subwatershed of Menlo Park (sediment target, with regional identified project).

As can be seen in the above results, the cost-optimization favored implementation of different combinations of GI projects within each subwatershed. These combinations were based on: (1) number and type of GI project opportunities identified within each subwatershed, and (2) cost-effectiveness given various characteristics associated with GI control measure efficiency (typically governed by infiltration rates), higher sediment (or PCBs) generation in upstream areas, etc. During implementation, it is almost certain that the actual implementation of GI will not follow the RAA output exactly; however, the recipe provides "management metrics" by subwatershed (described below) to guide the adaptive management process. Dimensions and location of GI projects will vary based on on-the-ground feasibility and site-specific constraints. GI performance varies based on factors like the physical properties of the facility and upstream drainage area managed. For these reasons, it is not recommended that *GI capacity* serve as the focus for stormwater improvement goals for the GI Plan.

The RAA recommends management metrics for the GI Plan that are based on metrics that can be easily measured and tracked throughout implementation. At the left side of the table in Table 2 are

columns under the header "Management Metrics for GI," which include performance metrics for "% Load Reduction PCBs (Annual)," "Annual Volume Managed (acre-ft)," and "Impervious Area Treated (acres)." The "% Load Reduction PCBs (Annual)" and "Annual Volume Managed (acre-ft)" metrics are based on annualized results represented in the RAA modeling system that are directly comparable to TMDL WLAs. The "% Load Reduction PCBs (Annual)" provides a relative comparison of the load reduction to be achieved within each subwatershed. The "Annual Volume Managed (acre-ft)" shows the acre-feet of water captured and infiltrated and/or treated within each subwatershed, resulting in a total annual volume of 110.6 acre-feet of stormwater managed in Menlo Park for an average year. This 110.6 acre-feet of stormwater managed could serve as the primary metric to be tracked for GI implementation. In other words, stormwater volume managed is being used as a unifying metric to evaluate GI effectiveness. "Impervious Area Treated (acres)"is an additional metric suggested by the MRP for implementation tracking. As a result of adaptive management, the implementation plan may change over time and alternative GI projects can be substituted without having to re-run the RAA model, as long as the "Management Metrics for GI," representing the goals for the GI Plan, remain on track.

1.6 Implementation Schedule

Throughout the adaptive management process, the City will continue to verify feasible opportunities for GI projects to meet the final load reduction goals for 2040. The process will include the tracking of management metrics and continued re-evaluation of GI project opportunities considered for the RAA. For instance, the RAA assumed projected amounts of LID associated with new and redevelopment, which are subject to change based on factors that are outside the control of the City. If less development occurs over time, more green streets or regional projects on public land may be needed to provide equivalent volume management. For the RAA and GI Plan, a preliminary schedule was developed in order to chart a potential course for GI implementation, which considered the various project opportunities.

The MRP requires reporting of goals for implementation of GI for interim milestones 2020 and 2030, in addition to the final milestone of 2040. In order to estimate the amount of GI to be implemented at these milestones, various assumptions were made in terms of the pace of implementation for various GI project types. Separate analyses determined the projected amount of LID associated with new development and redevelopment by 2020, 2030, and 2040. In addition, the Cartan Field regional project, in the Town of Atherton, is assumed to be built and operational by 2030. Finally, 33 percent of green streets required by 2040 are assumed to be implemented by 2030. The resulting schedule presented in Figure 1-4 demonstrates anticipated interim and final milestones for GI implementation in terms of structural capacity (corresponding to the capacities presented at the right side of Table 2). These interim and final GI capacities are subject to adaptive management, however the 2040 Management Metrics for GI (left side of Table 2) sets the ultimate goal for GI planning efforts and tracking.

Table 2 also provides a comparison of the amount of GI capacity estimate to be needed in Menlo Park to address 2040 goals for Scenario 1 (jurisdictional) and Scenario 2 (countywide) (see Table 1-1). Results demonstrate that if the 17.8% sediment load reduction target is met countywide, the RAA favors the implementation of additional GI projects within the Menlo Park, above the amount needed if Menlo Park only addressed the 17.8 sediment reduction within the City jurisdiction. The countywide scenario would require significant additional discussion among San Mateo County Permittees in order to provide cost-share agreements that would result in more GI implementation within Menlo Park, likely resulting in less GI implemented in other city or unincorporated County jurisdictions. However,

comparison of these scenarios further demonstrates the need for an adaptive management framework to further investigate the most cost-effective approach to countywide GI implementation.

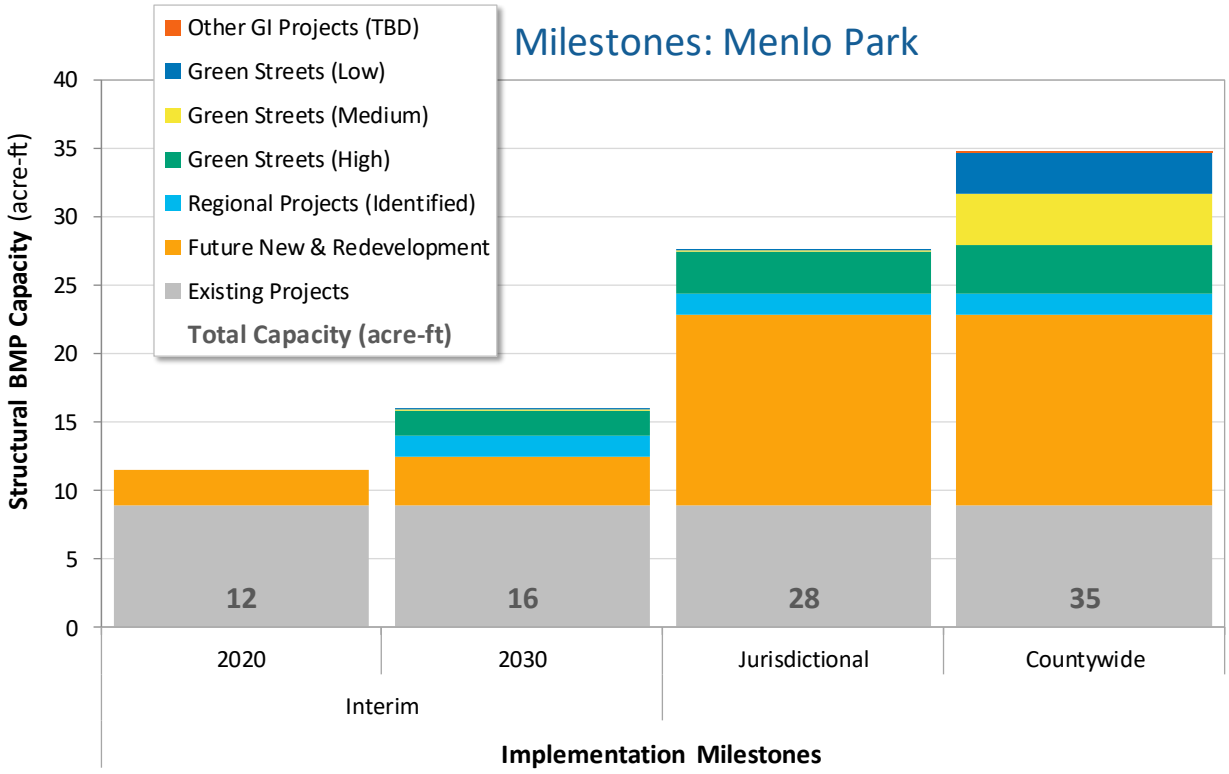

Figure 1-8. Summary GI capacity for interim and final implementation milestones.

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D. Belmont-specific Model Strategies and Implementation Measures Identified by the Countywide Program Green Infrastructure Reasonable Assurance Analysis

BELMONT

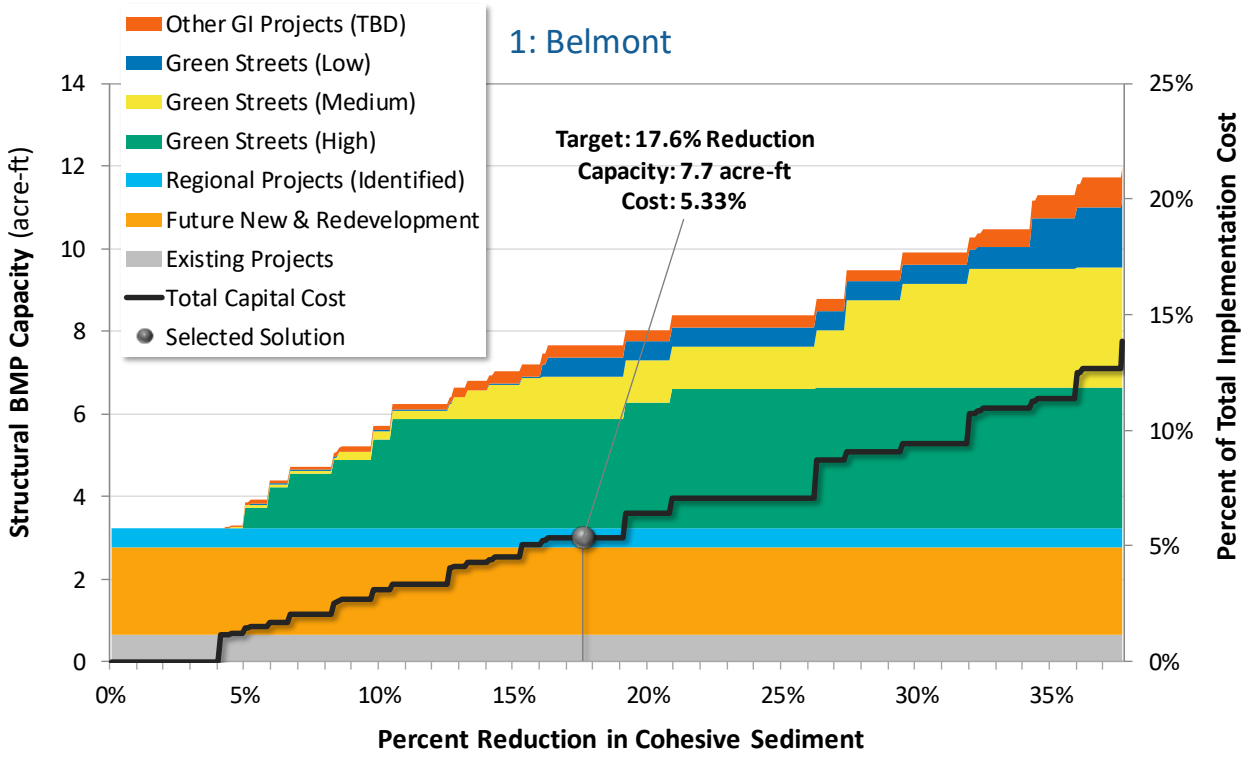

Figure 1. Optimization summary for Belmont, sediment target (by jurisdiction).

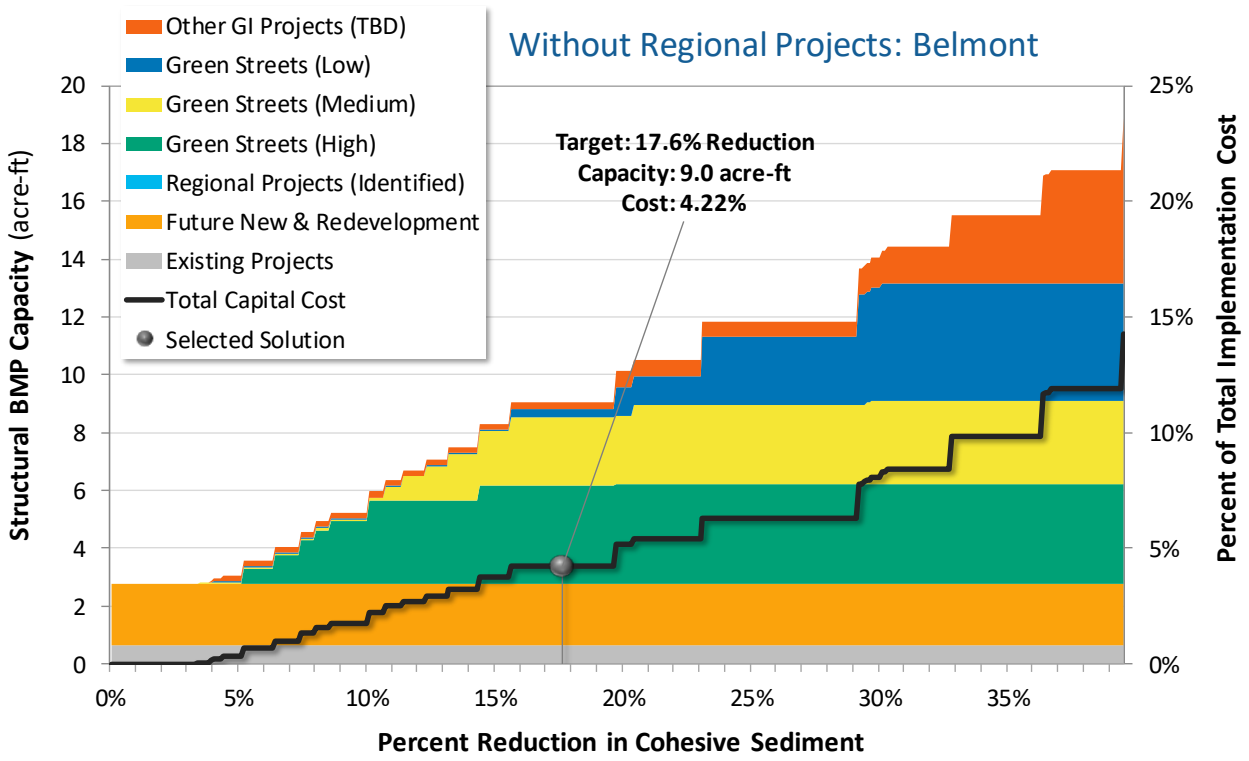

Figure 2 Optimization summary for Belmont, sediment target (by jurisdiction) without regional projects.

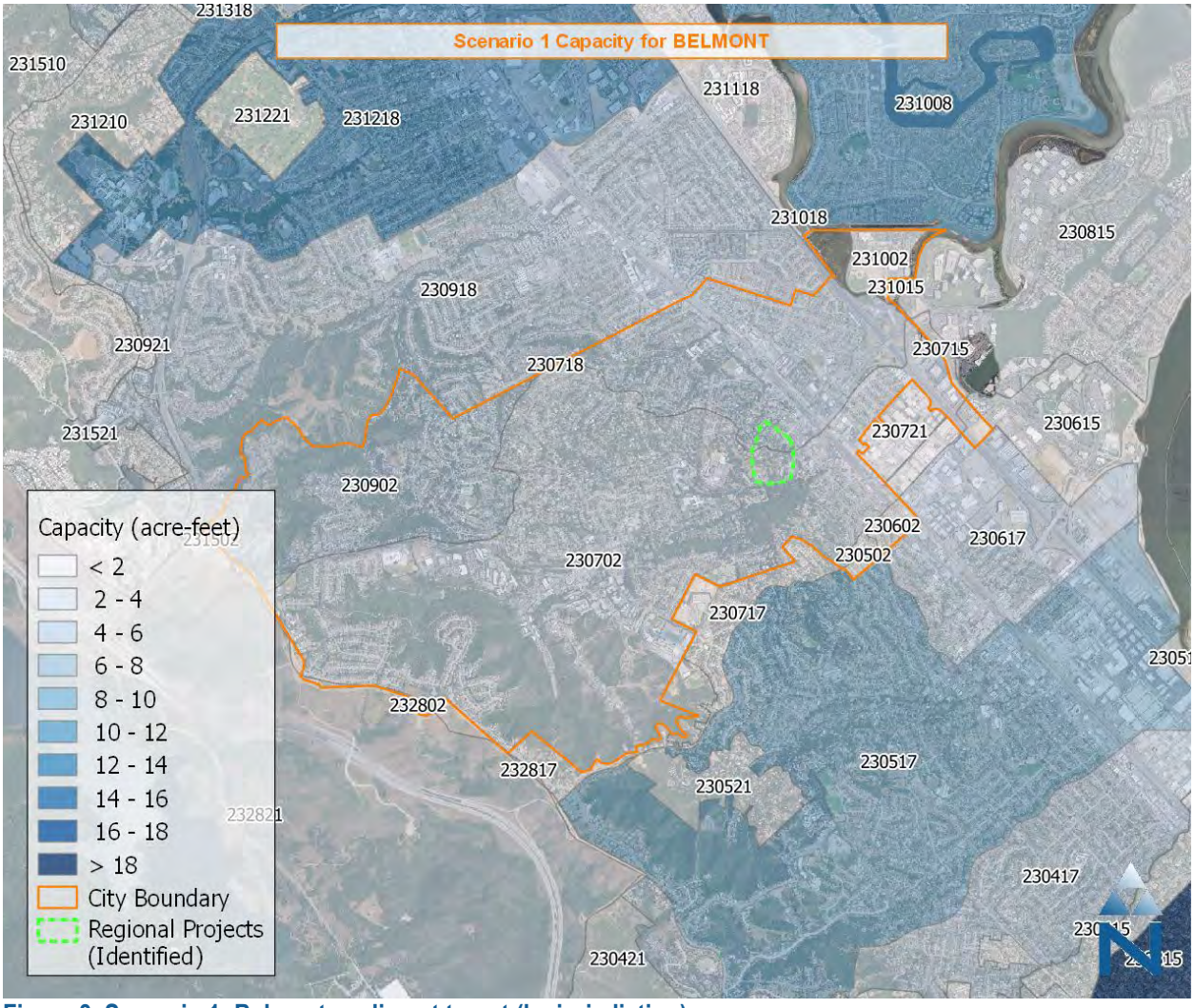

Figure 3. Scenario 1: Belmont, sediment target (by jurisdiction).

Table 1. Scenario 1, Belmont: Sediment Target (By Jurisdiction, With Regional Projects)

Subwatershed ID	Management Metrics for GI			Green Infrastructure Capacity to Achieve 17.6% Reduction Target (Capacity expressed in units of acre-feet)							
				Existing/Planned			Green Streets				
	% Load Reduction PCBs (Annual)	Annual Volume Managed (acre-ft)	Impervious Area Treated (acres)	Existing Projects	Future New & Redevelopment	Regional Projects (Identified)	High	Medium	Low	Other GI Projects (TBD)	Total BMP Capacity (acre-ft)
230502	42%	1.42	1.13	--	0.01	--	--	0.03	--	0.05	**0.1**
230602	59%	5.73	6.29	0.19	0.07	--	0.00	0.03	0.03	0.19	**0.5**
230702	12%	67.76	25.57	0.33	0.61	0.32	1.02	--	--	--	**2.3**
230902	33%	64.73	68.50	0.13	1.23	0.13	2.01	0.78	0.25	--	**4.5**
231002	33%	4.73	6.13	--	0.20	--	--	0.19	0.18	--	**0.6**
231502	69%	0.04	0.01	--	--	--	--	--	--	0.00	**0.0**
232802	30%	0.82	0.24	--	--	--	--	--	--	0.05	**0.0**
Total	**19.1%**	**145.2**	**107.9**	**0.7**	**2.1**	**0.5**	**3.0**	**1.0**	**0.5**	**0.3**	**8.0**

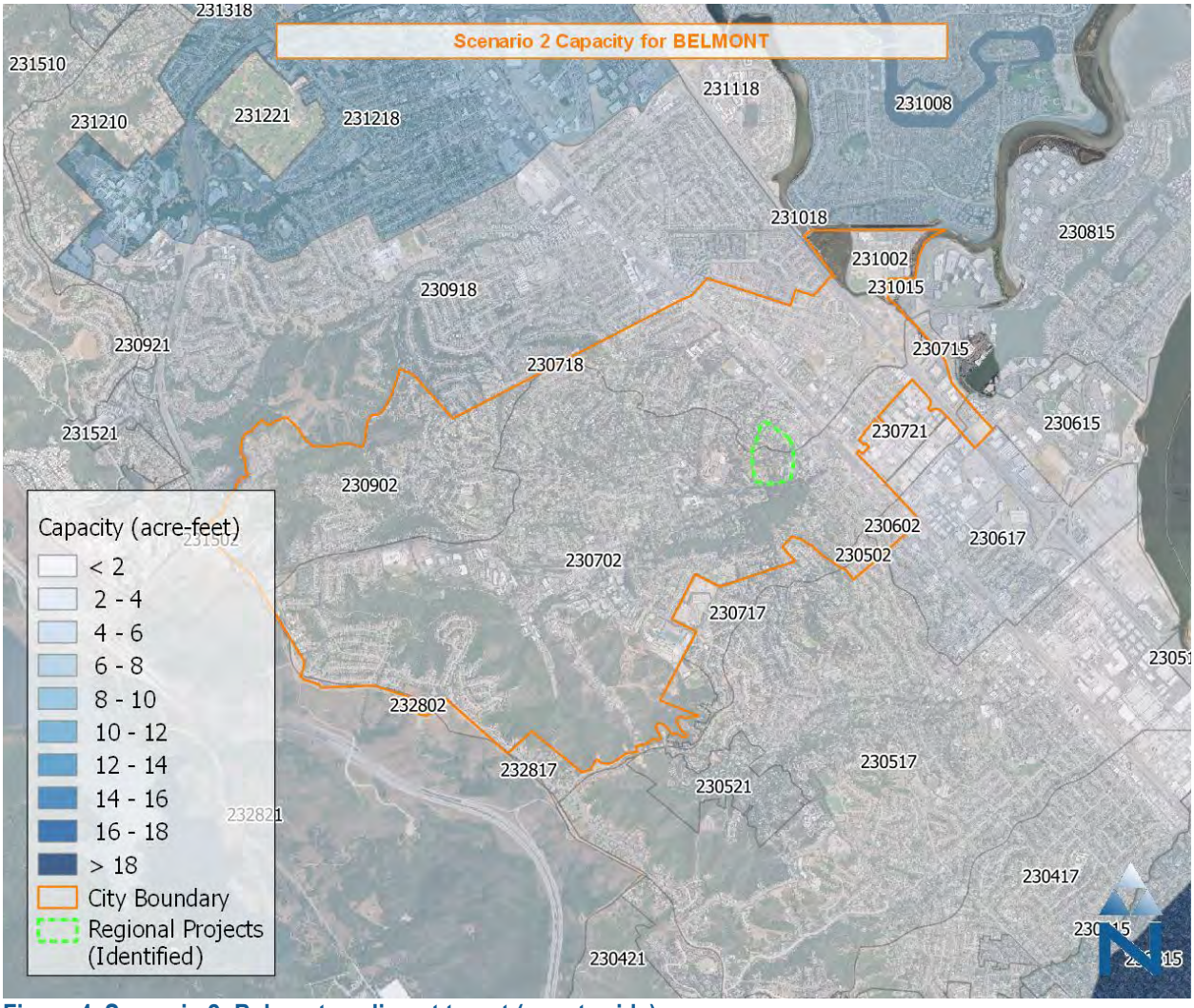

Figure 4. Scenario 2: Belmont, sediment target (countywide).

Table 2. Scenario 2, Belmont: Sediment Target (Countywide, With Regional Projects)

Subwatershed ID	Management Metrics for GI			Green Infrastructure Capacity to Achieve 17.6% Reduction Target (Capacity expressed in units of acre-feet)							
				Existing/Planned			Green Streets				
	% Load Reduction PCBs (Annual)	Annual Volume Managed (acre-ft)	Impervious Area Treated (acres)	Existing Projects	Future New & Redevelopment	Regional Projects (Identified)	High	Medium	Low	Other GI Projects (TBD)	Total BMP Capacity (acre-ft)
230502	2%	0.09	0.13	--	0.01	--	--	--	--	--	**0.0**
230602	15%	2.13	2.73	0.19	0.07	--	--	--	--	--	**0.3**
230702	4%	20.85	6.52	0.33	0.61	0.32	--	--	--	--	**1.3**
230902	4%	8.41	13.65	0.13	1.23	0.13	--	--	--	--	**1.5**
231002	10%	1.47	3.54	--	0.20	--	--	--	--	--	**0.2**
231502	0%	0.00	--	--	--	--	--	--	--	--	**0.0**
232802	0%	0.00	--	--	--	--	--	--	--	--	**0.0**
Total	**4.1%**	**33.0**	**26.6**	**0.7**	**2.1**	**0.5**	**--**	**--**	**--**	**--**	**3.2**

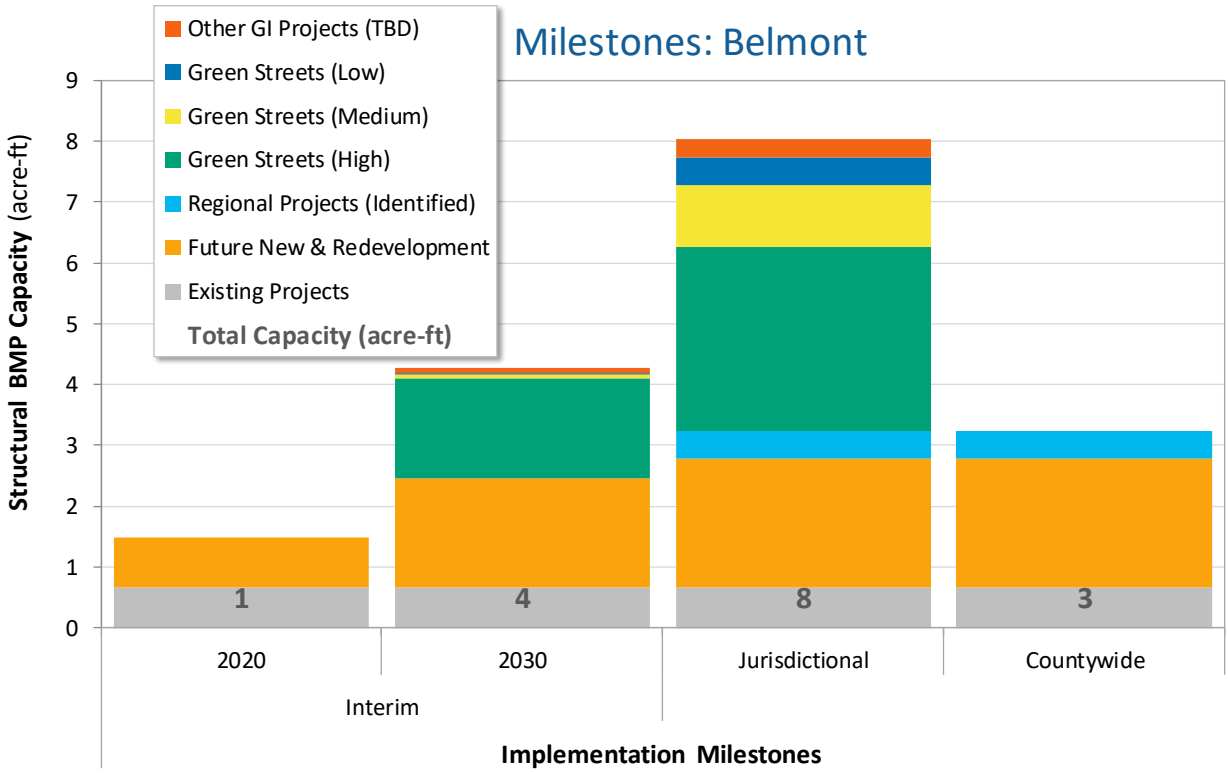

Figure 5. Summary GI capacity for interim and final implementation milestones.

Table 3. Implementation Milestones: Belmont

Implementation Metrics		Implementation Milestones: Belmont					
		Incremental		Cumulative		Final 2040	
		2020-2030	2030-2040	2020	2030	Jurisdictional	Countywide
Index	% Load Reduction	3.5%	12.8%	2.8%	6.3%	19.1%	4.1%
	Volume Managed (acre-ft/yr)	26.3	95.6	23.4	49.7	145.2	33.0
	Treated Impervious (acres)	10.1	84.6	13.1	23.3	107.9	26.6
Capacities (acre-ft)	Existing Projects	0.0	0.0	0.7	0.7	0.7	0.7
	Future New & Redevelopment	1.0	0.3	0.8	1.8	2.1	2.1
	Regional Projects (Identified)	--	--	--	--	0.5	0.5
	Green Streets (High)	--	1.4	--	1.6	3.0	--
	Green Streets (Medium)	--	1.0	--	0.1	1.0	--
	Green Streets (Low)	--	0.4	--	0.0	0.5	--
	Other GI Projects (TBD)	--	0.2	--	0.1	0.3	--
	Total	**1.0**	**3.3**	**1.5**	**4.3**	**8.0**	**3.2**